A COMPARATIVE STUDY OF FACTORS AFFECTING THE CHOICE OF PLACE OF DELIVERY AMONG HIGH RISK MALAY MOTHERS IN SUNGAI ACHEH, SEBERANG PERAI SELATAN, PULAU PINANG, 1985-1986.

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DISSERTATION SUBMITTED TO THE UNIVERSITY OF MALAYA FOR PARTIAL FULFILMENT FOR THE DEGREE OF MASTER OF PUBLIC HEALTH

1986 - 1987

ACKNOWLEDGMENT

I would like to express my gratitude and appreciation to my advisor Associate Professor Dr. John T. Arokiasamy for his guidance, assistance and encouragement given during the preparation of this dissertation.

I am also very grateful to the staff of Pusat Kesihatan Kecil Sungai Acheh for their help in data collection, to Mrs.Chan for helping me to analyse the data with a micro computer and also to Miss Afrida for typing this manuscript.

Lastly, but not the least I am also grateful to my wife Dr.Farida Elizar and to my daughter Nadiyaa Afifa for their love and understanding.

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INTRODUCTION

1.1 POPULATION OF MALAYSIA

Malaysia is a developing country, with an area of about 329,293 square kilometers. It is made up of Peninsular Malaysia and the states of Sabah and Sarawak located in the north-western part of Borneo island.

The population of Malaysia was estimated at 15.8 million in 1985 with 82.1% living in Peninsular Malaysia 8.1% in Sabah and 9.8% in Sarawak.[1] The population of Malaysia consists of various ethnic groups. In Peninsular Malaysia alone, the ethnic distribution in 1985 was 56.5% Malays, 32.8% Chinese, 10.1% Indians and 0.6% others. Based on the 1980 census, about 62.6% of the population of Malaysia resided in rural areas, while only 37.4% lived in urban areas.

In 1985, about 41.3% of Malays, 47.2% of Chinese and 10.7% of Indians in Peninsular Malaysia lived in urban areas.[1]

1.2 RURAL HEALTH SERVICE

The health status of the people of Malaysia has improved as a result of government activities geared towards improving living conditions, nutrition and the standard of medical and health care in general.[2] Prior to independence in 1957, the rural areas of Malaysia where three quarter of the population used to live, were

largely neglected in so far as the health services were concerned. After independence, the government began a major drive to provide health care particularly for mothers and children in the rural areas of Malaysia. The basic rural health plan involved the setting up of one rural health unit for every 50,000 persons of the rural population. Each unit was a three tier system comprising of one main health centre (1 centre : 50,000 population), four health sub-centres (1 sub-centre : 10,000 population) and twenty midwife clinics (1 clinic : 2000 population) as illustrated in figure I.

However, at the mid-term review of the second Malaysia plan, this system was modified to a two tier system, where the first tier comprises of one health centre to serve 20,000 of rural population each. Every health centre is provided with a medical officer, a dental officer and other para medical and auxiliary staff. At the periphery, the midwife clinic is upgraded into a rural community clinic, to serve 4000 population. This constitutes the second tier. Instead of one midwife, a rural community clinic will be staffed by two multi-purpose rural community nurses.

This enables an increase in the scope of services provided at the first level of contact, namely the rural community clinic, and a more effective referral system to the health centre where a doctor and a dentist are available. The rural community nurse in a rural

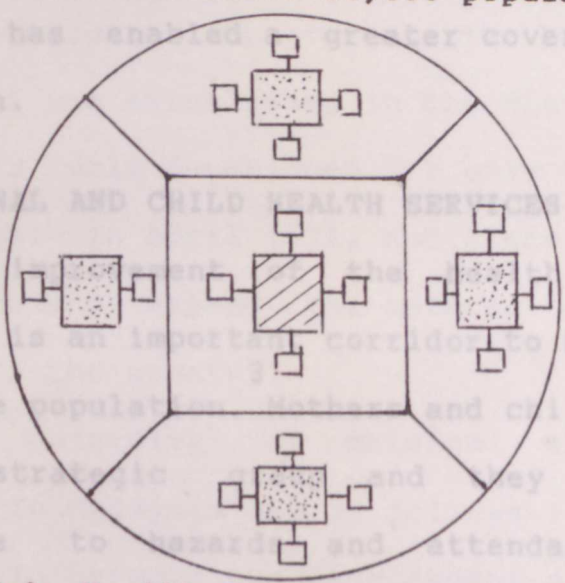
FIGURE I

Two Tier System and Three Tier System,

Rural Health Service, Malaysia.

THREE TIER SYSTEM

One Rural Health Unit serve 50,000 population.



Main Health Centre (for 50,000 population)

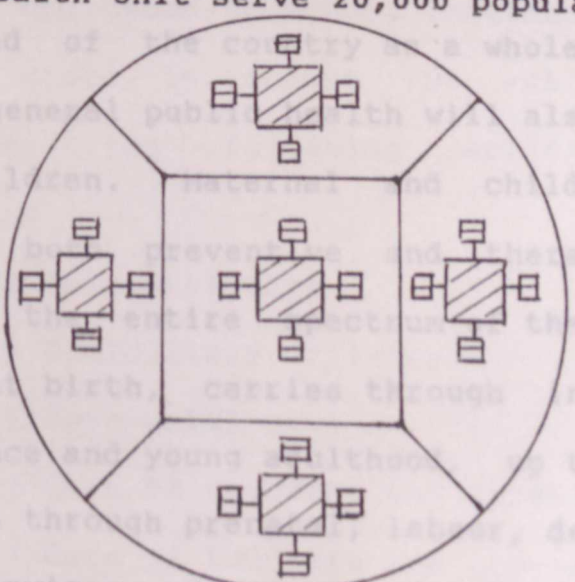
Health Sub-centre (for 10,000 population)

Midwife Clinic (for 2,000 population)

TWO TIER SYSTEM

(Re-organisation of the Three Tier System)

One Rural Health Unit serve 20,000 population.



Health Centre (for 20,000 population)

Rural Community Clinic (for 4,000 population)

community clinic also provides treatment for minor ailments besides maternal, child health and domiciliary delivery services. The expansion of rural health services has enabled a greater coverage of the rural population.

1.3 MATERNAL AND CHILD HEALTH SERVICES

The improvement of the health of mothers and children is an important corridor to better health for the entire population. Mothers and children constitute a highly strategic group and they are especially vulnerable to hazards and attendant problems of reproduction, growth and development. They, at the same time, form a segment of population which is most responsive to health care. The health of mothers and children is closely related to the general health of the community and to the social, economic and cultural background of the country as a whole. Measures which improve general public health will also benefit mothers and children. Maternal and child health practice embodies both preventive and therapeutic concepts, spanning the entire spectrum of the human life. It begins at birth, carries through infancy, childhood, adolescence and young adulthood, up to conception. It continues through prenatal, labour, delivery and post-partum services. Maternal and child welfare services in

Peninsular Malaysia started in 1932 with introduction of legislation for the control of practice of midwifery and the training of midwives in the Straits Settlements. In 1956 Maternal and Child Health Services came to the fore as an essential component of the National Rural Health Development Programme. The Maternal and Child Health Unit was established in the Ministry of Health in 1964. This unit functioned for only one year and was revived again in April 1971, and since then has continued to develop and expand the maternal and child health services in the country.

The objectives of Maternal and Child Health Programme in Malaysia are as follows [4] :

i) To promote the development of a healthy family.

ii) To promote and maintain the health of women in the reproductive age group.

iii) To promote and maintain optimum health and development of children from infancy through childhood to school leaving age.

In order to ensure the achievment of these objectives, the following activities have been implemented [4] :

i) Antenatal care

ii) Domiciliary delivery

iii) Post-natal care

iv) Care of newborns and infants

v) Care of toddlers and pre-school children

vi) Care of school children

vii) Family planning

viii) Health education

- develope health education approaches required for the programme in consultation with Health Education Programme staff.
- determine methods of health education approaches.
- distribute health education materials

ix) Training

- conduct in service courses for programme staff
- arrange and conduct workshop and seminars
- conduct refresher courses and on the job training

x) Research and evaluation

- conduct operational research on various aspects of programme service delivery and acceptability by the public
- evaluate programme activities and technologies employed

xi) Surveillance

- recording of data relevant to and required by programme
- collation and analysis
- reporting
- recommendations for action

xii) Emergency transport service.

1.4 LITERATURE REVIEW

Obstetrics is concerned that each pregnancy results in a live, healthy mother, and a live healthy baby,whose future potential for growth and development, mentally or physically, has not been jeopardized by the birth process. Childbirth in itself is a natural phenomenon and the large majority of women need no interference but only close observation, moral support and protection against human meddling. A healthy woman who delivers spontaneously performs a job that cannot be improved upon.[5]

The fulfillment of a mother's physiological, psychological and social obligation is epitomized by a desired pregnancy terminating at term in normal labour and delivery of a liveborn normal neonate.[6] Unfortunately,every year some 500,000 women die of pregnancy related causes, and maternal mortality rate in countries where the problems is most acute are as much as 200 times higher than the lowest rate in industrial countries.[7] In 1976 in Sweden the probability of a women dying during pregnancy was 7 per 100,000 livebirths while a woman in Malaysia in the same year ran a fifteen times higher risk of dying than her Swedish counterpart. In our neighbouring country of Singapore, the risk of a pregnant woman dying was only three times more than her

Swedish counterpart.[8]

Eventhough the expectation among many women of a desired pregnancy terminating at term in a normal baby is met, among mothers in the developing world, including Malaysia, pregnancy termination may not ensure the delivery of a desired healthy and normal baby. This is a result of the toll from perinatal morbidity and mortality, which are disproportionately high. In the developing countries where 72% of the world's population live, perinatal mortality risks are several times higher than that in the developed countries.[9] The perinatal period (that is the period from 28 weeks of gestation to the first week of life) inspite of its shortness, has been recognised as a very critical period in the human lifespan.[8] The developing conceptus interacts with multiple factors in mother, such as age, parity, height, socioeconomic status, and past obstetric history in a highly complex manner. Also these factors are likely to be interdependent in their influence on the pregnancy outcome.

1.4.1 HIGH RISK PREGNANCY

High risk pregnancy is defined as one in which the prospective mothers have, or are likely to have, conditions associated with child bearing, which include hazards to the health of the mothers or their infants, (including those which may cause physical or mental

defects in the infants) and in which the prospective mother comes from a low income family.[10]

Such a pregnancy should be suspect of producing a high risk infant. The high risk infant has been defined by the United State's Children's Bureau as one who has or is likely to develop a physical, intellectual, personality or social handicap capable of affecting his normal growth, development and capacity to learn. This disability may have its origin in the prenatal, perinatal or postnatal period and may be the result of unfavorable heredity or environmental influences acting separately or in combination.

There are clearly many clinical conditions that are associated with a high risk pregnancy, which in turn will be responsible for a greater proportion of perinatal mortality and morbidity. Experience from Upstate Medical Center, Syracuse New York indicates that 70% - 80% of newborns with complications originate from the high risk obstetric population. It is clear that the risk factors for perinatal outcome are virtually the same as for maternal outcome.[11]

Marmol *et al*,[12] found that 70% of maternal mortalities occured in women identifiable as high risk. It is also interesting to note that in Malaysia more than 55% of maternal deaths occured among women whom identified as high risk cases.[13]

1.4.2 RISK FACTORS

Risk factors are those factors known to adversely affect pregnancy outcome. Many studies have been done in this field, and numerous factors have been attributed to perinatal loss as well as maternal wastage. However for the purpose of this study, only the major factors will be discussed. There are five major factors, and the factors are ;

I. MATERNAL AGE

Numerous studies have demonstrated conclusively that perinatal mortality is higher among women under the age of 18 years and over the age of 35 years old.[14,15] In large study in Northern Nigeria,[16] nearly one in five infants born to mothers aged 15 years or under, died during the perinatal period. This was 2.5 times the mortality rate of infants for mothers aged 20 to 24 years. The perinatal mortality in women over the age of 40 years is three times higher compared to perinatal martality among mothers of all age groups.

II. PARITY OF MOTHER

The influence of parity on perinatal mortality has been demonstrated in many studies. It is again the extreme groups, namely the primigravidae on the one hand and the grand multiparity on the other hand, which are at greater risk.[18,19] A recent study in Malaysia also demonstrated high pregnancy wastage among grand-multiparous mothers (parity more than

five).[20]

III. CONDITIONS OF PRESENT PREGNANCY

i) Nutrition

Malnutrition and severe anaemia adversely influence the course and outcome of pregnancy. These affect foetal growth and birthweight, and hence contribute significantly to perinatal mortality. A WHO Expert Committee on Nutrition in Pregnancy ang Lactation (1965)[21] notes that "It seems reasonable to conclude that undernutrition and malnutrition among mothers, especially in the developing countries, contributes towards impaired maternal , foetal and infant survival, health and vitality". Stillbirth ratio among anaemic mothers (91.0 per thousand livebirths) was six times higher than non anaemic mothers (15.7 per thousand livebirths).[22]

ii) Pre-eclampsia

It is also known that pregnancy induced hypertension, whose causes is still unknown is a multifaceted disorder of pregnancy. Pre-eclampsia is characterized by high blood pressure, the presence of protein in the urine, and/or oedema after the twentieth week. The possible effect on the foetus of pre-eclampsia include intra-uterine growth disturbance, premature labour,

stillbirth and abruptio placenta. Risks for the mother include death, convulsions, haemorrhage into the brain with possible permanent neurological deficits, loss of vision (usually temporary), haemorrhage into the liver, and kidney failure. Whenever convulsion occur, eclampsia is said to exist.

In the 1958 British Perinatal Study,[23] infants of mothers with severe pre-eclampsia had three times the perinatal mortality rates of normotensives. However, in the 1970 survey,[24] this relative risk fell to 1.5 times. Early detection and treatment is most important to reduce the risk of foetal and maternal mortality due to eclampsia.

iii) Per vaginal bleeding

Bleeding in early and late pregnancy due to whatever cause indicates a highrisk conceptus.[25] Its danger on the development of the foetus is determined by various factors such as the time at which it occurs, its intensity and recurrence or persistence of the bleeding. Two important causes of per vaginal bleeding during pregnancy are placenta praevia and abruptio placenta. Placenta praevia refers to a low lying placenta which covers the inner opening to the cervix either partially or completely, or is close to

the edge of the cervix. Bleeding occurs as the cervix stretches before or during labour. Once placenta praevia is diagnosed, the pregnancy is considered to be high risk. The woman should be admitted to the hospital and stay in bed up to the time of delivery. Because of the high risk of haemorrhaging in labour, delivery should be accomplished by ceaserian section after the foetus reaches a mature 37 weeks gestation. The cause of placenta praevia is not known. Abruptio placenta refers to a peeling away of the placenta from the uterus. It is the major cause of bleeding late in pregnancy. The accumulated blood may be trapped within the uterus, or it may escape between the amniotic membranes, passing through the uterus and cervix into the vagina, where it is recognizable as vaginal bleeding. Since there are various degrees of abruption, the signs and symptoms also vary. At one extreme the foetus may die and the mother is found to be in profound shock from blood loss, while at the other extreme, the mother may show no vaginal bleeding, the foetalheart rate may be normal, and only persistent uterine pain points to the problem. The risk for recurrence of abruptio placenta in a woman who has already experienced this complication is about ten times higher than in a women who never had this

complication.

iv) Multiple pregnancy

Raised perinatal mortality in multiple pregnancy is associated with various factors and the chief cause is the frequent incidence of premature birth. Twins may also be exposed to a greater danger of acute intranatal hypoxia. Petterson et al[26], in their study showed that full term twins had five times the perinatal mortality rate of the full term singleton.

v) Abnormal presentation

About 3% of term pregnancies involve breech presentations. Although spontaneous breech delivery belongs to the physiological delivery group, it is nevertheless included among high risk factors, because it is more often accompanied by complications of labour than vertex delivery. Breech deliveries have been shown to result in high perinatal mortality risk. Kaupilla[27] demonstrated that breech deliveries have 6.4 times higher mortality than non-breech deliveries. Breech deliveries are common in foetuses with various birth defects. For example, a baby with Down's Syndrome is twice as likely as a normal baby to be a breech.

vi) Postmaturity

Most pregnancies last between 38 weeks and 42 weeks. After 42 full weeks, a foetus is at increased risk (two to three times) of dying prior to, or during birth.[28] Some post-date foetuses also have various degrees of intra-uterine growth disturbance. These babies show signs of having regressed in nutritional status. Their length and head size may be normal while their weight may be reduced. Foetuses whose growth has been affected are at greater risk of death before, during and after labour. They are also more likely to have difficulties as a newborn and require special attention.

IV. PREVIOUS OBSTETRIC HISTORY

A patient's past obstetric history gives a good indication of her capacity for succesful pregnancy. Perinatal and early pregnancy loss has been shown to recur in the same patient.[25] [29] Fortar observed that in mothers with a history of abortion, ectopic pregnancy, premature birth, stillbirth, neonatal death, toxaemia, antepartum haemorrhage or caeserian section, the risk of having a stillbirth or neonatal death in the next pregnancy may be increased by one and a half to three times. Frederick[30] in his study showed that the risk of perinatal death to the foetus in the present pregnancy is increased by 1.6 times if the

preceeding delivery was an abortion. The risk is increased by three times if the preceeding delivery ends up in a stillbirth or neonatal death. Arshat[20] also demonstrated that the outcome of a pregnancy was strongly related to preceeding pregnancy as well as frequency of previous wastage. That is to say, a poor pregnancy outcome is more likely to recur in women who had previously experienced poor pregnancy outcome.

V. ASSOCIATED MEDICAL PROBLEM

i) Hypertension

Hypertension is one of the common medical complication during pregnancy. The diagnosis of hypertension in pregnancy is not very easy to make bacause there are other conditions such as pre-eclampsia and chronic nephritis that can bring about an elevation in the blood pressure of the pregnant women. Since, by defination pre-eclampsia is not diagnosed before the twenty eight week of gestation, except in cases of hydatidiform mole, it follows that the diagnosis of hypertension will have to be made either very early in pregnancy or in the non pregnant state. There is no precise dividing line between normal and elevated blood pressure. The World Health Organisation defines hypertension as a casual blood pressure higher than

160/95 mm Hg. Those with a casual blood pressure less than 140/90 mm Hg in the seated position are considered normotensives. Those with blood pressure between 140/90 mm Hg and 160/95 mm Hg are characterized as having borderline hypertension.[31] Hypertension can cause an increase in maternal morbidity. The higher the level of blood pressure at the commencement of pregnancy the worse the prognosis. When the blood pressure is very high, the patient may develop abruptio placentae and this may lead to renal complications, particularly acute renal failure. The effect on the foetus may be serious. The higher the blood pressure the higher the incidence of abortion, intra-uterine death of the foetus and premature onset of labour.

ii) Diabetes in pregnancy

Pregnancy complicated by diabetes mellitus is a classic example of highrisk pregnancy.[32] The effect of diabetes in pregnancy includes:

- increased risk of pre-eclampsia and eclampsia
- increased susceptability of the pregnant women to infection
- increased size of the foetus, which may complicate delivery
- increased likelihood of caeserian section
- increased incidence of polyhydramnios
- increased incidence of congenital abnormalities

- problems for the baby at birth, such as low blood sugar, respiratory difficulties, and excessive jaundice

Pregnancy associated with diabetes mellitus always accompanied by high perinatal mortality. But the high occurence of perinatal death as a result of diabetes can be reduced if the diabetes mellitus in mothers is well controlled throughout pregnancy. The high perinatal mortality in diabetic pregnancies has been known to decrease from 40% to as low as 5% when diabetes mellitus is controlled.[33] In general, the care of diabetic pregnant women, by emphasizing close control of blood glucose, has vastly improved outcomes in recent years.

iii) Heart problem (cardiopathy)

Cardiac lesions complicating pregnancy constitute the most significant medical hazards encountered in obstetrics, and although heart disease is present in only 1% - 2% of all pregnant women, it ranks fourth as a cause of maternal mortality.[34] Heart disease is difficult to diagnose in pregnancy because some of the signs and symptoms of heart disease such as breathlessness on exertion, oedema and heart murmurs may be found in a normal pregnancy. Therefore all patients who have undue breathlessness on exertion should be suspected of having heart disease and refered to hospital for

proper investigations.

1.4.3 HOME DELIVERY VERSUS HOSPITAL DELIVERY

Choosing where to have the baby is one of the most important decisions a pregnant woman and her partner must make. Their decision is usually based on many factors, but one of the more important factors that they must consider is whether the pregnancy is normal or is one that is considered as high risk. This is important because it will have some effect on the safety and well being of both the baby and the mother. Home delivery among high risk mothers results in very high maternal and perinatal wastage. In Malaysia, maternal mortality rate is highest among the Malays in the rural areas, and among women delivering at home attended primarily by traditional birth attendants.[35]

Although it is now a common knowledge that high risk pregnancy is one of the important cause of perinatal mortality, and even greater than any other complication that may develop during labour, labour itself cannot be ignored as a risk, especially after a high risk pregnancy. As such, a high risk pregnant woman should deliver in a hospital so that she could be given more intensive observation and care than usual.[36]

In Wales and England, the data collected from 1975 onwards showed that though the proportion of babies delivered at home decreased from 3.2% to 1.9% among all

births, the perinatal mortality for home deliveries rose from 18.6 to 22.9 per thousand births from 1975 to 1977. During the same period the perinatal mortality for all births declined by 12% from 19.2 to 16.9 per thousand births.

In most of the developed countries of the world, the trend is towards institutional delivery. 98% of pregnant women in the German Federal Republic seek institutional delivery.[37] Birth delivered at home in England and Wales declined from 85% of all births in 1927 to 1.1% in 1982.[38] However, the reverse is true among the developing countries like Malaysia, where a large proportion of deliveries are still domiciliary. For example data from the Malaysian Population and Family Survey 1984-1985 showed that about 60% of all births were institutional deliveries while 40% were delivered at home.[39] In the same survey it was also found that there is a great variation between the different ethnic groups in their choice of place of delivery. Among the Malays 39.2% of births were institutional deliveries while 60.8% were delivered at home. In sharp contrast, majority of the Chinese (97.7%) and the Indians (84.4%) seem to prefer institutional delivery. Home delivery was therefore preferred by only about 2.3% of Chinese and 15.6% of Indians.

1.4.4 GOVERNMENT MIDWIFE VERSUS TRADITIONAL BIRTH ATTENDANT

In many parts of developing world, a proportion of domiciliary deliveries are still attended by traditional birth attendants, known as dukun bayi (in Indonesia), bidan kampung (in Malaysia), mohtamyae (in Thailand), hilot (in Philippinnes), matron (in Africa), and dai (in India, Pakistan, Bangladesh).[40]

In Malaysia the majority of these traditional birth attendants have never received any training in modern obstetrics and hygiene, while a proportion have had some training usually conducted locally by government health staff. With the development of rural health services, an increasing number of trained midwives are being introduced into rural areas.

Trained government midwives are auxiliary midwives who have received from 18 to 24 months of training and who have passed the necessary examination to enable them to be officially registered.

The traditional birth attendant or bidan kampung has been the traditional source of midwifery care in rural Malaysia. She continues to remain prominent and in 1972 was responsible for 55% of all births in the predominantly rural state of Trengganu in Peninsular Malaysia. Some of them have been partially trained by local health staff. Training is usually brief and may

consist of a dozen classes on elementary hygiene and the need to refer cases with obstetrical complications to hospital.[41]

The traditional birth attendants are a powerful and influential group, especially in the rural communities. They not only provide maternal health care but also cater for the cultural and religious needs of these communities. In view of their active role in the community especially in relation to traditional practices related to pregnancy and childbirth, it was found necessary to effect certain measures of control and supervision over them. The Midwives Act 1966 and the Midwives (Registration) Regulation 1971 has allowed for traditional birth attendants to be eligible for registration and to practice as midwives under part II of the register. The registration of Traditional birth attendants was closed on 31st. July 1972.[42] There are at present 4236 traditional birth attendants in Peninsular Malaysia, out of which 2248 (53%) are not registered.[43] However, it is interesting to note that in Peninsular Malaysia deliveries conducted by the traditional birth attendants have decreased from 33% in 1970 to 10.6% in 1980 and 4.3% in 1985. At the same time, deliveries conducted by the government midwives who are in facilities other than hospitals has increased from 31.5% in 1980 to 33.1% in 1985.[43]

1.5 PROBLEM STATEMENT

The nursing mother, infant and young child constitute a population group vulnerable to the adverse effects of the environment, made more so by the poor health status of the economically disadvantaged population which is still a relatively large proportion of the country's population. There is much concern over maternal and infant waste as a result of conditions which are preventable, and while marked improvements in the decline of mortality has been achieved, further reduction can be made particularly in perinatal, neonatal and toddler mortality as seen in developed countries.

There still exist today negative health attitudes, beliefs, and adherence to customs and traditions in a large proportion of our population which hinder the acceptance of conventional health care and perpetuates a preference for the traditional system especially during delivery. This accounts for delivery by traditional birth attendants and reluctance of highrisk mothers to deliver in hospital.[42]

The Malays have the greatest tendency to choose home delivery (60%) as opposed to hospital delivery (40%).[39] Although urbanisation and better socio-economic conditions have led to increase in hospital delivery, social customs continue to exert an influence on their bahaviour in favour of home delivery. In sharp contrast,

almost all Chinese babies were delivered in the hospitals or clinics. The Indians were the most frequent users of government hospitals across nearly all social strata.[39]

While mortality rates have come down to a very low level in the country as a whole, substantial differentials still exist. In 1984 the maternal mortality rate stood at 0.52 per 1000 births for the Malays as compared to 0.11 per 1000 births for the Chinese and 0.28 per 1000 births for the Indians, and the corresponding figures for perinatal mortality rate were 22.96 per 1000 births, 12.02 per 1000 births and 23.20 per 1000 births respectively for the three ethnic groups.

The writer having the privilege of working in a rural health centre in Seberang Perai for about two years, between 1984-1986, had also noticed apparent negative health attitudes and practice, especially among the Malay community. There was a high occurrence of home delivery among high risk Malay mothers. Despite advice given by health staff they still preferred home delivery. This study is carried out to find out some of the factors which might influence the choice of place of delivery among high risk Malay mothers. It is also the intention of the writer to use the findings as a baseline data for further study in this field.

CHAPTER II

OBJECTIVES

The overall objective of this study is to determine the factors affecting the choice of place of delivery among high risk Malay mothers, and to compare these factors between those who deliver at home and those who deliver in hospital.

2.1 SPECIFIC OBJECTIVES

The specific objectives of this study are listed as follows;

i) To study and to compare the high risk Malay mothers who delivered at home and those who delivered in hospital with respect to their:

- age
- parity
- level of education
- occupation
- household income
- husband's level of education
- husband's occupation
- distances from their houses to the antenatal clinic and to the nearest hospital.

ii) To determine and to compare their knowledge and attitude regarding risk factors of pregnancy.

iii) To study and to compare the common risk factors among the mothers.

iv) To determine the factors influencing choice of home delivery and hospital delivery among the high risk mothers.

v) To determine the reasons for choice of type of midwife among the high risk mothers who delivered at home.

CHAPTER III

METHODOLOGY AND LIMITATIONS

3.1 STUDY METHODS

The study is a retrospective descriptive survey. Two designs are used :

i) A record based study to determine all the high risk mothers registered at all the government's antenatal clinics in the operational area of Pusat Kesihatan Kecil (Health sub-centre) Sungai Acheh, Seberang Perai Selatan, in the state of Pulau Pinang in Peninsular Malaysia between first January 1985 to the thirty first September 1986.

ii) An interview of all the selected mothers to determine their knowledge on and attitude towards the risk factors operating during pregnancy as well as reasons for their choice of place of delivery and their choice of midwife. Some general factors such as age, parity and level of education which might affect their choice of place of delivery are also elicited through the interview. The writer with the help of the staff nurse in-charge of the Pusat Kesihatan Kecil Sungai Acheh had studied the master register of delivery for its operational area. A list of all the high risk mothers registered between 1st. January 1985 and 31st.

September 1986 was prepared. Their names, addresses, and their place of delivery were identified and entered into a format used for data collection.

A questionaire to elicit information on knowledge and attitude and other factors related to choice of place of delivery and type of midwife was prepared by the writer in the Malay language.

3.2 THE PRE-TEST

A pre-test of the questionaire was carried out on twelve high risk mothers in another health centre in Seberang Perai Selatan to highlight possible flaws in the questionaire, to identify difficult questions which are hard to understand and to determine whether there are any offensive and threatening questions.

After the pre-test, some changes were made in the questionaire especially the questions that will be asked during the interview.

3.3 THE STUDY SAMPLE (RESPONDENTS)

The criteria used for the selection of the sample is presented in Appendix I. All the mothers who had at least one of the risk factors mentioned in Appendix I and were registered at the antenatal clinics in the operational area of Pusat Kesihatan Kecil Sungai Acheh during the time period 1st January 1985 to 31st September 1986 were included into the study sample. A total of 221 mothers who fulfilled the criteria were

identified. Every effort was made to include all of them into the study. However, only 155 of the mothers responded to the survey. The rest had either transfered to other places or were not at home during the visits of the interviewers.

3.4 THE INTERVIEWERS

Most of the mothers were interviewed by the writer as far as possible. A staff nurse and assistant nurse from the Health Center were trained in the interviewing technique and all aspects of the questionaire were discussed to ensure understanding and uniformity. Each staff selected was required to interview at least two mothers in the presence of the writer to ensure her technique of interview was correct and satisfactory. This was done on the first day of the survey. The interview was carried out in the Malay language since all the respondents were Malays.

3.5 THE STUDY PROCESS

Permission to conduct the study was obtained from the Medical Officer of Health of the district. The coorperation of the sister in-charge was also sought especially for the utilization of staff for the interview.

3.6 THE STUDY PERIOD

The study design and proposal was prepared during the period of September to November 1986. Review of

literature were also done during this period. The survey was conducted for a period of 18 days starting on 6th. December 1986. A pre-survey to locate all the houses of the respondents was done by a Public Health Overseer two days prior to the survey proper. Due to time constraints, all respondents were visited by the interviewer only once. Those who were not at home during the visits were considered as missing. The progress of the survey was monitored daily to ensure that it would be completed during the available time. All completed questionaires were collected daily by the writer to check on the quality of the information collected. Any error or omission was corrected on the spot.

3.7 DATA ANALYSIS AND PROCESSING

All information obtained during the survey was processed and analysed using a micro-computer. Appropriate statistical procedures were applied where necessary.

3.8 LIMITATIONS

i) Study population

Since the study population was small and taken only from one area in the district of Seberang Perai Selatan, there might be some elements of bias in the selection of the sample. Therefore the sample might not be representative of the population of Seberang Perai Selatan. Thus generalisation cannot be made beyond the study population.

ii) Study sample and non-response

Ideally the study sample should include all high risk mothers in the district, but due to time and manpower constraints only high risk mothers from Sungai Acheh was chosen for the study. The study sample also should include high risk mothers of all the major ethnic groups such as the Chinese and Indians. However, the study area was a predominantly a Malay area, and only 30 Chinese mothers fulfilled the criteria as high risk. Since their number was small they were not included in the study. No Indian mothers fulfilled any of the criteria as high risk.

In this study only 155 out of 221 mothers responded to the interview. There are 66 non-respondents, and among them 39 (59.1%) delivered in hospital and 27 (40.9%) delivered at home. On the other hand, among the 155 respondents, 87 (56.1%) delivered in hospital and 66 (43.9%) delivered at home. Unfortunately there is no other information available about the non-respondents that would assist in evaluating the similarities or differences between the respondents and non-respondents. While there appears to be similarity in the choice of place of delivery, the respondents and non-respondents could be different with respect to other important variables. This would bias the study findings. However, statistical tests did not show any significant difference between the respondents and non-respondents

with respect to their choice of place of delivery (X^2 = 0.00008 $p > 0.05$).

iii) Study instruments

The questionaire prepared touched only on a few factors that might affect the choice of place of delivery and midwife among the respondents. The questions regarding risk factors in pregnancy touched only on some aspects of the risk factors. Pre-testing of the questionaire were done only on a few mothers. All these factors might reduce the sensitivity of the questionaire to a certain extent.

iv) Study method

Since all the interviewers and the writer himself had worked in the study area in the past, this could introduce some bias in the responses from the mothers as a result of familiarity and acquaintance.

v) Cultural value

The cultural background of the respondents, who are Malay, could have influenced them to give information or answers that they perceive as acceptable to the interviewers rather than giving the true answers and responses. This could affect the validity and reliability of the findings to a certain extent.

Due to the constraints listed above, the interpretation of the findings in this study will have to be made with caution.

CHAPTER IV

BACKGROUND OF THE STUDY AREA

Seberang Perai Selatan is one of five administrative districts in the state of Pulau Pinang (see figure II). It is situated on the mainland side of Pulau Pinang state. On its southern border is the state of Perak while on its eastern border is the state of Kedah. On its west is the Straits of Malacca and on its north is the district of Seberang Perai Tengah.

Seberang Perai Selatan, a rural district, has an area of 244.7 square kilometers. Its population based on the 1980 census was 73,262 and the estimated population for 1985 was 82,718. The ethnic composition was 48% Chinese, 36% Malays, 15.5% Indians and 0.5% other races. The population density was 338 per square kilometer.

Seberang Perai Selatan has three towns in the district namely Simpang Ampat, Sungai Bakap and Nibong Tebal. The district office and all other government departments are located in Jawi (see Figure III).

The main occupation of the people relates to agriculture such as padi planting and working in rubber estates, oil palm estates and vegetables gardens. Some work as fisherman while others are involved with poultry and pig rearing. There are also a few small factories in

FIGURE II

Map of the state of Pulau Pinang

(Showing the five Administrative Districts)

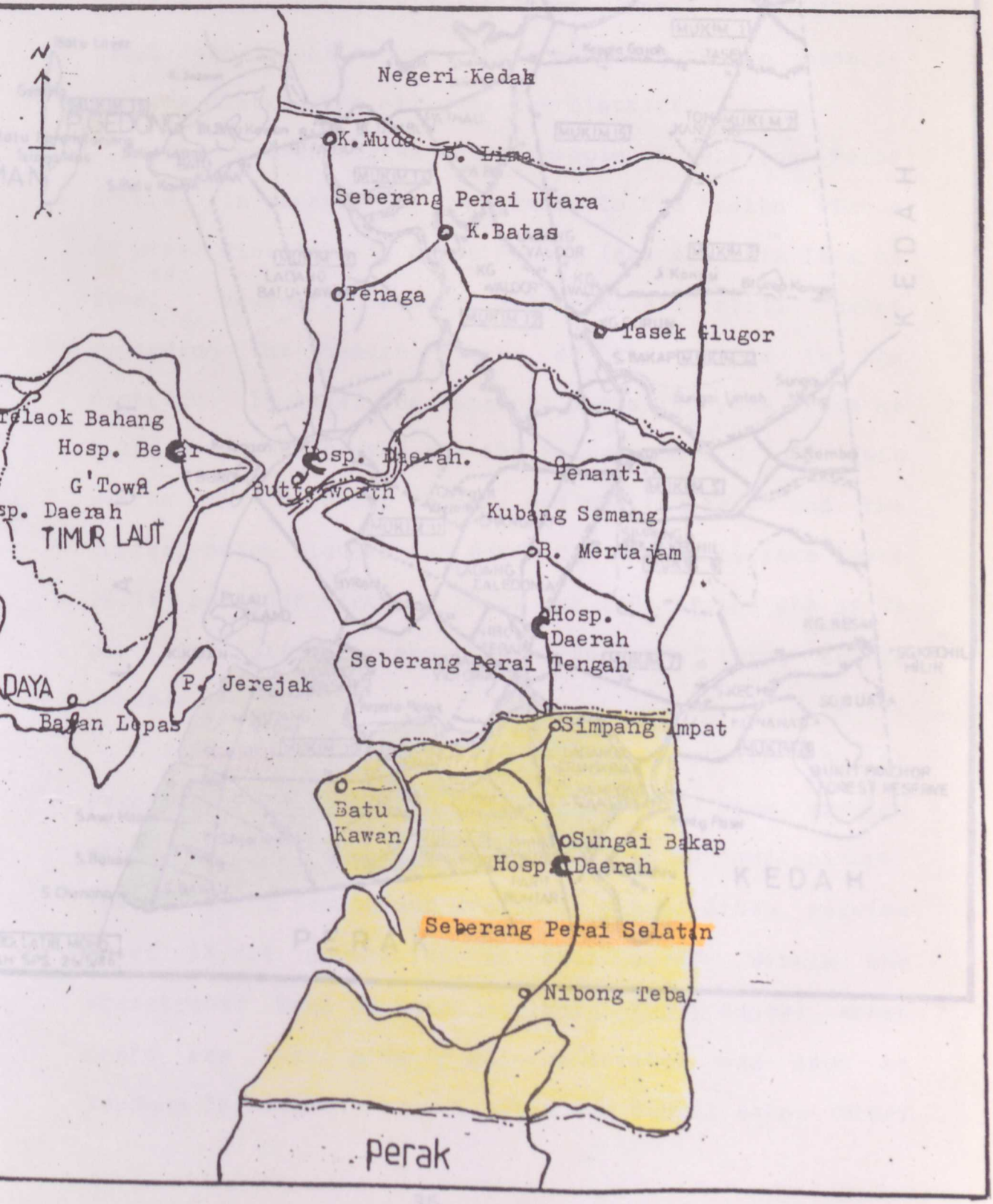


FIGURE III

Map of Seberang Perai Selatan

the district such as furniture, animal food, and paper factories.

As far as health facilities is concerned there is a district hospital in Sungai Bakap, and four health centers, one each in Simpang Ampat, Sungai Bakap, Nibong Tebal and Sungai Acheh. There are also twelve midwife clinics distributed all over the district.

The health status of the people of Seberang Perai Selatan in general are comparable to the health status of other districts in Pulau Pinang (see Appendix IV-A to IV-H)[44]. However, ethnic differentials still exist regarding the health status of the people in the district. In 1984, the maternal mortality rate stood at 1.19 per 1000 births for the Malays and 0.0 per 1000 births for both the Chinese and the Indians, and the corresponding figures for perinatal mortality rate were 26.24 per 1000 births, 16.02 per 1000 births and 39.79 per 1000 births respectively for the three ethnic groups[1].

Sungai Acheh situated at the southern end of Severang Perai Selatan, is basically a rice growing area. Most of the people are involved in agriculture. There is one health sub-centre in Sungai Acheh serving about 18,000 population in that area. Within the operational area of Pusat Kesihatan Kecil Sungai Acheh there are three midwife clinics located one each at Tanjung Berembang, Sungai Acheh and Sungai Bakau. Other

than district hospital in Sungai Bakap, which is about 13 kilometres away, the people of Sungai Acheh also have access to the district hospital of Parit Buntar in the northern part of Perak state, which is about 10 kilometres from Sungai Acheh.

CHAPTER V

FINDINGS

5.1 CHARACTERISTICS OF THE STUDY POPULATION

5.1.1 THE RESPONDENTS

Out of the 221 high risk mothers identified, only 155 responded. Hence the response rate was 70.1%, of which 87 (56.1%) had hospital delivery and 68(43.9%) had home delivery. On the other hand, among the 66 (29.9%) non-respondents, 39 (59.1%) delivered in hospital and 27 (40.9%) delivered at home.

5.1.2 AGE DISTRIBUTION

From Table I it is seen that mothers in all age groups almost equally preferred either hospital delivery or home delivery. The mean age for high risk mothers who delivered in hospital was 31.3 years while that for the mothers who delivered at home was 32.0 years.

However there is no significant difference in the choice of place of delivery with respect to mothers' age.

TABLE I

Distribution of high risk mothers by age and choice of place of delivery

AGE GROUP	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
18-25	23 (26.4%)	15 (22.1%)	38 (24.5%)
26-30	17 (19.5%)	13 (19.1%)	30 (19.4%)
31-35	19 (21.8%)	15 (22.1%)	34 (21.9%)
36-40	21 (24.1%)	18 (26.5%)	39 (25.2%)
40	7 (8.2%)	7 (10.2%)	14 (9.0%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

t = 0.667 p > 0.05

Mean age for Hospital delivery mothers = 31.3 years

Mean age for Home delivery mothers = 32.0 years

5.1.3 PARITY

Table II shows that a greater proportion of para 1 mothers preferred hospital delivery (32.2%) compared to home delivery (17.6%). Among the high risk mothers who delivered at home 42.6% were of para 2 - 5 compared to 35.6% among the mothers who delivered in hospital. On the other hand, mothers of para 6 and para 7 taken together perferred home delivery (35.4%) instead of hospital delivery (23.0%).

However there was statistically no relationship between choice of place of delivery and parity of mothers.

5.1.4 OCCUPATION OF MOTHER

Most of the respondents in this study were housewives (83.2%), as shown in Table III. A slightly higher proportion among high risk mothers who delivered at home were housewives (91.2%) compared to the respondents who delivered at home (77.0%). Five of the respondents in this study were government servants, and all of them delivered in hospital.

Overall there was statistically no significant difference between the occupations of the mothers with respect to their choice of place of delivery. However,

TABLE II

Distribution of high risk mothers by parity and place of delivery

PARITY	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
1	28 (32.2%)	12 (17.6%)	40 (25.8%)
2 - 5	31 (35.6%)	29 (42.6%)	60 (38.7%)
6 - 7	20 (23.0%)	24 (35.4%)	44 (28.4%)
8 - 11	8 (9.2%)	3 (4.4%)	11 (7.1%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$\chi^2 = 6.877$ $p > 0.05$

TABLE III

Distribution of high risk mothers by occupation and place of delivery

OCCUPATION OF MOTHERS	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
Housewives	67 (77.0%)	62 (91.2%)	129 (83.2%)
Farming	11 (12.6%)	4 (5.8%)	15 (9.7%)
Small Business	2 (2.3%)	1 (1.5%)	3 (1.9%)
Government Servant	5 (5.8%)	0 (0.0%)	5 (3.3%)
Factory	2 (2.3%)	1 (1.5%)	3 (1.9%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$x^2 = 6.902$ $p > 0.05$

when housewives were compared with the risk of the mothers there was a statistically significant difference with respect to their choice of place of delivery (x^2 = 4.25 $p < 0.05$).

5.1.5 EDUCATION OF MOTHERS

Table IV shows that about 64.5% of the respondents in this study had primary education, 22.6% had secondary education. However, 11.6% of the respondents had no formal education at all. High risk mothers of all level of educations almost equally preferred either hospital delivery or home delivery except mothers with upper secondary education.

There is statistically no association between level of education of high risk mothers with respect to their choice of place of delivery.

5.1.6 OCCUPATION OF HUSBAND

Varied occupation of respondents' husbands were found as shown in Table V. High risk mothers whose husband were fishermen preferred home delivery (20.6%) as compared to hospital delivery (5.7%). On the other hand, the respondents whose husband are government servants preferred hospital delivery (23.0%) as compared to home delivery (13.2%).

TABLE IV

Distribution of high risk mothers by level of education and place of delivery

LEVEL OF EDUCATION	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
No Formal Education	10 (11.5%)	8 (11.8%)	18 (11.6%)
Primary	55 (63.2%)	45 (66.2%)	100 (64.5%)
Lower Secondary	9 (10.3%)	10 (14.7%)	19 (12.3%)
Upper Secondary	11 (12.6%)	5 (7.3%)	16 (10.3%)
Tertiary	2 (2.4%)	0 (0.0%)	2 (1.3%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$x^2 = 3.245$ $p > 0.05$

TABLE V

Distribution of high risk mothers by husbands occupation and place of delivery

OCCUPATION OF HUSBAND	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
Farmer	28 (32.2%)	20 (29.4%)	48 (31.0%)
Fisherman	5 (5.7%)	14 (20.6%)	19 (12.3%)
Odd jobs	14 (16.1%)	11 (16.2%)	25 (16.1%)
Small Business	8 (9.2%)	7 (10.3%)	15 (9.7%)
Government Servant	20 (23.0%)	9 (13.2%)	29 (18.7%)
Factory	12 (13.8%)	7 (10.3%)	19 (12.2%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$x^2 = 9.322$ $p > 0.05$

When husbands who were fisherman compared with all the other husbands taken together there was a statistically significant difference with respect to their wives' place of delivery ($x^2 = 6.50$ $p < 0.05$).

5.1.7 EDUCATION OF HUSBAND

From Table VI it is seen that high risk mothers whose husbands' had no formal education or had only primary level education preferred home delivery (7.4% and 77.9% respectively) to hospital delivery (1.1% and 64.4% respectively). On the other hand respondents whose husbands' had either lower secondary or upper secondary level education preferred hospital delivery (19.5% and 9.2% respectively) to home delivery (8.8% and 5.9% respectively).

There differences are statistically significant. ($x^2 = 12.198$ $p < 0.05$).

5.1.8 HOUSEHOLD INCOME

Table VII shows that high risk mothers with household income of less than $400.00 preferred home delivery (89.7%) to hospital delivery (70.1%). On the other hand, mothers with household income of $400.00 and more preferred hospital delivery (29.9%) to home delivery (10.3%).

TABLE VI

Distribution of high risk mothers by husbands education and choice of place of delivery

LEVEL OF EDUCATION	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
No Formal Education	1 (1.1%)	5 (7.4%)	6 (3.9%)
Primary	56 (64.4%)	53 (77.9%)	109 (70.3%)
Lower Secondary	17 (19.5%)	6 (8.8%)	23 (14.8%)
Upper Secondary	8 (9.2%)	4 (5.9%)	12 (7.7%)
Tertiary	5 (5.8%)	0 (0.0%)	5 (3.3%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$\chi^2 = 12.198$ $p > 0.05$

TABLE VII

Distribution of high risk mothers by household income and place of delivery

INCOME	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
< $100	0 (0.0%)	1 (1.5%)	1 (0.6%)
$100 - $199	14 (16.1%)	11 (16.2%)	25 (16.1%)
$200 - $299	26 (29.9%)	30 (44.1%)	56 (36.1%)
$300 - $399	21 (24.1%)	19 (27.9%)	40 (25.8%)
$400 - $499	12 (13.8%)	4 (5.9%)	16 (10.4%)
> = $500	14 (16.1%)	3 (4.4%)	17 (11.0%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

Median income for hospital delivery mothers = $300.00

Median income for home delivery mothers = $250.00

t = 2.533 p < 0.05

The mean household income for hospital delivery

mothers was $346.50 while for the home delivery mothers was $270.66.

There is a statistically significant difference in choice of place of delivery with regards to the mean household income ($t = 2.533$ $p < 0.05$).

5.1.9 DISTANCE TO ANTENATAL CLINIC

Table VIII shows that 36.8% of high risk mothers who delivered in hospital lived within 1-2 kilometers of the antenatal clinics they attended and 39.1% lived within 3-6 kilometers. Of those who delivered at home 47.1% and 26.5% respectively lived within this same range.

Eight percent of mothers who delivered in hospital and 10.3% of those who delivered at home lived 7 kilometers and further from the antenatal clinic they attended while 10.3% of the home delivery mothers also lived within this range.

The mean distance of their houses to the antenatal clinic they attended for respondent who delivered in hospital was 2.85 kilometers compared to 3.86 kilimeters for the respondents who delivered at home.

However, this difference was statistically not significant.

TABLE VIII

Distribution of high risk mothers by distance to the antenatal clinic and place of delivery

DISTANCE (km)	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
1 - 2 km	32 (36.8%)	32 (47.1%)	64 (41.3%)
3 - 6 km	34 (39.1%)	18 (26.5%)	52 (33.5%)
7 - 10 km	7 (8.0%)	4 (5.8%)	11 (7.2%)
> 10 km	0 (0.0%)	5 (7.4%)	5 (3.2%)
* Missing	14 (16.1%)	9 (13.2%)	23 (14.8%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

t = 1.705 p > 0.05

* Missing : no entry was made in the Questionaire.

Mean distance to antenatal clinic for hospital delivery = 2.85 km

Mean distance to antenatal clinic for home delivery = 3.69 km

5.1.10 DISTANCE TO THE NEAREST HOSPITAL

In Table IX it is seen that 10.3% of high risk mothers who delivered at home lived within 10 kilometers to the nearest hospital compared to only 5.7% of mothers who delivered in hospital.

It is also noted that 78.2% of the respondents who delivered in hospital lived within 11 - 20 of the nearest hospital. About 75.0% of the mothers who delivered at home also lived within this ranged from the nearest hospital.

The mean distance from their houses to the nearest hospital for the respondents who delivered in hospital was 9.22 kilometers while for the mothers who delivered at home the mean distance was 9.91 kilometers.

There was no significant difference in the choice of place of delivery among high risk mothres with respect to the distance from their house to the nearest hospital.

5.1.11 THE RISK FACTORS

The number of risk factors identified ranged from one to three factors per mother, as shown in Table X. Among the mothers who delivered in hospital 56.3% had only one risk factor, 32.2% had two and only 11.5% had three factors. The trend was also the same among the

TABLE IX

Distribution of high risk mothers by distance to the nearest hospital and place of delivery

DISTANCE (km)	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
6 - 10 km	5 (5.7%)	7 (10.3%)	12 (7.7%)
11 - 15 km	48 (55.2%)	41 (60.3%)	89 (57.4%)
16 - 20 km	20 (23.0%)	10 (14.7%)	30 (19.4%)
* Missing	14 (16.1%)	10 (14.7%)	24 (15.5%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

t = 1.488 p > 0.05

* Missing : no entry was made in the Questionaire.

Mean distance to nearest hospital for hospital delivery = 9.22 km

Mean distance to nearest hospital for home delivery = 9.91 km

TABLE X

Distribution of high risk mothers

by number of risk factors and place of delivery

NO. OF RISK FACTOR	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
ONE	49 (56.3%)	44 (64.7%)	93 (60.0%)
TWO	28 (32.2%)	20 (29.4%)	48 (31.0%)
THREE	10 (11.5%)	4 (5.9%)	14 (9.0)
TOTAL	87 (100%)	68 (100%)	155 (100%)

high risk mothers who delivered at home where 64.7% had one factor, 29.4% had two and only 5.9% had three factors.

The most common risk factor for both hospital and home delivery respondents as seen in Table XI was maternal age (43.79% and 42.55% respectively) followed by parity (43.79 and 42.55% respectively). The third common risk factor identified among the respondents in this study was associated with conditions involving the present pregnancy such as anaemia, pre-eclampsia, abnormal presenntation of the foetus and post maturity. Associated medical problem and previous bad obstetric history were the next most common risk factors.

5.2 KNOWLEDGE ON RISK FACTOR

The following findings pertain to the information presented in Table XII.

5.2.1 AGE OF MOTHER

When the respondents were asked about the age at which a mother is considered as highrisk, 66.7% of the mothers who delivered in hospital answered correctly compared to only 51.5% of the mothers who delivered at home.

TABLE XI

Distribution of high risk mothers by the common risk factor and place of delivery

RISK FACTOR	HOSPITAL DELIVERY	HOME DELIVE	TOTAL
AGE	60(43.8%)	40(42.5%)	100(43.3%)
PARITY	28(20.4%)	26(27.7%)	54(23.4%)
CONDITION OF PRESENT PREGNANCY	25(18.3%)	17(18.1%)	42(18.2%)
- Anaemia	5	2	
- PV bleeding	1	2	
- Pre-eclampsia	4	2	
- Abnormal presentation	6	5	
- Multiple pregnancy	1	0	
- Post maturity	8	6	
ASSOCIATED MEDICAL PROBLEM	21(15.3%)	8(8.5%)	29(12.5%)
- Hypertension	17	7	
- Diabetes mellitus	3	1	
- Heart diseases	1	0	
PREVIOUS OBSTETRIC HISTORY	3(2.2%)	3(3.2%)	6(2.6%)
- Stillbirth	1	2	
- Post partum hhr	1	1	
- Caeserian section	1	0	
TOTAL	137	94	231

TABLE XII

Distribution of high risk mothers by knowledge of risk factors and place of delivery

KNOWLEDGE	PLACE	KNOW	DONT KNOW	TOTAL	p value
MATERNAL AGE	HOSP	58(66.7%)	29(33.3%)	87	p > 0.05
	HOME	35(51.5%)	33(48.5%)	68	
PARITY OF MOTHER	HOSP	44(50.6%)	43(49.4%)	87	p > 0.05
	HOME	20(29.4%)	48(70.6%)	68	
PV BLEEDING	HOSP	81(93.1%)	6(6.9%)	87	p > 0.05
	HOME	57(83.8%)	11(16.2%)	68	
CAUSES OF ANAEMIA	HOSP	75(86.2%)	12(13.8%)	87	p > 0.05
	HOME	58(85.3%)	10(14.7%)	68	
POST MATURITY	HOSP	86(98.9%)	1(1.1%)	87	p > 0.05
	HOME	60(88.2%)	8(11.8%)	68	
MEDICAL PROBLEMS	HOSP	71(81.6%)	16(18.4%)	87	p > 0.05
	HOME	53(77.9%)	15(22.1%)	68	
PREVIOUS HISTORY	HOSP	86(98.9%)	1(1.1%)	87	p > 0.05
	HOME	65(95.6%)	3(4.4%)	68	

5.2.2 PARITY OF MOTHER

It is seen that 50.6% of the respondents who delivered in hospital are aware that parity of mother is considered as high risk. On the other hand, only 29.4% of the home delivery mother are aware of this fact. There was a significant association between the choice of place of delivery with awareness of parity as a risk factor ($x = 6.206$ $p < 0.05$).

5.2.3 CONDITION OF PRESENT PREGNANCY

With respect to knowledge on the condition of present pregnancy that is considered as high risk, 93.1% of the respondents who delivered in hospital and 83.8% of the mothers who delivered at home knew that any per vaginal bleeding during pregnancy is dangerous.

The causes of pallor or anaemia during pregnancy were known to 86.2% of respondents who delivered in hospital and 85.3% of respondents who delivered at home. There was no association in the choice of place of delivery with this knowledge.

Knowledge that a post-maturity mother of more than 42 weeks gestation should deliver in hospital was known to 98.9% of the respondents who delivered in hospital compared to 88.2% of the mothers who delivered at home. This difference was found to be statistically significant ($x^2 = 6.043$ $p < 0.05$)

5.2.4 ASSOCIATED MEDICAL PROBLEM

Eighty one point six percent respondents who delivered in hospital and 77.9% of the mothers who delivered at home are aware that common medical problems such as hypertension, diabetes mellitus and heart disease affect pregnancy negatively.

5.2.5 PAST OBSTETRIC HISTORY

Previous obstetric experience such as abortion, stillbirth, caeserian section or other surgical interference as a risk factor in pregnancy was known to 98.9% of mothers who delivered in hospital compared to 95.6% of mothers who delivered at home.

5.3 ATTITUDE

5.3.1 WHETHER THEY WERE INFORMED ABOUT THEIR RISK PREGNANCY BY HEALTH STAFF

All the high risk mothers were informed by the health staff about the condition of their pregnancy. However when the respondents were asked again during the survey whether they were informed or not that their pregnancy was high risk, 8.8% of the mothers who delivered at home denied that they had been informed. However, all of the respondents who delivered in hospital said that they were informed regarding their risk pregnancy by the health staffs (see Table XIII).

TABLE XIII

Distribution of high risk mother by place of delivery and whether they were informed by health staff that their pregnancy was high risk

RESPONSE	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
INFORMED	87 (100%)	62 (91.2%)	148 (96.1%)
NOT INFORMED	0 (0.0%)	6 (8.8%)	6 (3.9%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$x^2 = 5.79$ $p < 0.05$

5.3.2 OPINION REGARDING THEIR RISK PREGNANCY

As seen in Table XIV 69% of high risk mothers who delivered in hospital had the opinion that their pregnancy was a high risk pregnancy. Only 47.1% of the mothers who delivered at home shared the same opinion.

44.1% of the repondents who delivered at home believed their pregnancy was not at risk, compared to only 27.6% of the mothers who delivered in hospital who had the same opinion.

There is a statistically significant difference in the choice of place of delivery among high risk mothers with respect to their own opinion regarding their risk pregnancy ($x^2 = 7.979$ $p < 0.05$).

5.3.3 PERSON WHO DECIDES THE PLACE OF DELIVERY

Table XV shows that 76.1% of the respondents made their own choice of place of delivery. Among the high

TABLE XIV

Distribution of high risk mother by opinion regarding their risk pregnancy and place of delivery

OPINION	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
Risk pregnancy	60 (69.0%)	32 (47.1%)	92 (59.4%)
Normal pregnancy	24 (27.6%)	30 (44.1%)	54 (34.8%)
Not sure	3 (3.4%)	6 (8.8%)	9 (5.8%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$x^2 = 7.979$ $p < 0.05$

TABLE XV

Distribution of high risk mother by person who decides and place of delivery

PERSON WHO DECIDES	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
Respondent herself	62 (71.3%)	56 (82.4%)	118 (76.2%)
Husband	14 (16.1%)	8 (11.8%)	22 (14.2%)
Mother	3 (3.4%)	4 (5.8%)	7 (4.5%)
Father	1 (1.1%)	0 (0.0%)	1 (0.6%)
Relative	7 (8.1%)	0 (0.0%)	7 (4.5%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$x^2 = 7.874$ $p > 0.05$

risk mothers who delivered at home, 82.4% of them made their own decision to deliver at home, and 71.3% of the mothers who delivered in hospital also decided to do so on their own.

Husbands of the respondents were the decision makers in the choice of place of delivery for 16.1% of the mothers who delivered in hospital and 11.8% of the mothers who delivered at home.

Parents were responsible in the choice of place of delivery for 4.5% of the mothers who delivered in hospital and 5.9% of the respondents who delivered at home.

5.3.4 TIME OF MAKING THE CHOICE OF PLACE OF DELIVERY

Thirty two point two percents of the respondents who delivered in hospital made their choice of place of delivery during the first six months of their pregnancy and 19.5% decided at 7 - 8 months of pregnancy. On the other hand, 14.4% of the mothers who delivered at home also made the decision during the first 6 months and 7.4% decide at 7 - 8 months of pregnancy, as shown in Table XVI.

It is also noted that 52.9% of the high risk mothers who delivered at home made the choice of place of delivery when having labour pain. 25.3% of the

TABLE XVI

Distribution of high risk mothers by time of decision made and place of delivery

TIME	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
1 - 6 months pregnant	28 (32.2%)	10 (14.7%)	38 (24.5%)
7 - 8 months pregnant	17 (19.5%)	5 (7.4%)	22 (14.2%)
At term	20 (23.0%)	17 (25.0%)	37 (23.9%)
During labour pain	22 (25.3%)	36 (52.9%)	58 (37.4%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

$x^2 = 16.615$ $p < 0.05$

respondents who delivered in hospital aslo made their choice during this time.

There is a statistically significant difference in the choice of place of delivery among high risk mothers with respect to the time they made the decision ($x^2 = 16.615$ $p < 0.05$).

5.3.5 REASONS FOR CHOOSING HOSPITAL DELIVERY

A total of 132 reasons given by 87 of the respondents for delivering in hospital is summarised in Table XVII. The average number of reasons given by each mother was 1.5. The most common reason given by 74 (85.1%) of the mothers was that hospital delivery was modern and safe. 39 (44.8%) of the mothers delivered in hospital following advice given by the health staff. Influence by a family member was the reason for delivering in hospital for 15 (17.2%) of the mothers while 4 (4.6%) of the mothers delivered in hospital bacause they live near the hospital.

5.3.6 REASONS FOR CHOOSING HOME DELIVERY

There were varied rasons given by the high risk mothers for not delivering in hospital as shown in Table XVIII.

TABLE XVII

Reasons given by the respondents

for choosing hospital delivery

REASONS	NO. OF MOTHERS	% OF MOTHERS
Hospital delivery is modern and safe	74	85.1%
Advised by health staff to deliver in hospital	39	44.8%
Family members insist on hospital delivery	15	17.2%
Lived near the hospital	4	4.6%
TOTAL	132	

Number of respondents who delivered in hospital = 87

Number of reasons given by them = 132

Mean number of reasons per mother = 1.5

TABLE XVIII

Reasons given by the respondents for choosing home delivery

REASONS		NO.OF MOTHERS	% OF MOTHERS
PERSONAL FACTORS	Always had easy delivery	30	44.1%
	To be with family members	12	17.6%
	Had short labour pain	27	39.7%
	Afraid of surgery	11	16.2%
	Not familiar with hospital	19	27.9%
	Againts religion/culture	0	0.0%
FAMILY FACTORS	Nobody to look after children	21	30.9%
	Family refuse hospitalisation	7	10.3%
HOSPITAL RELATED FACTORS	Financial problem	3	4.4%
	No transportation	2	2.9%
	Hospital very far	2	2.9%
	Hospital staffs were rude	2	2.9%
	TOTAL	136	

Number of respondents who delivered at home = 68

Number of reasons given by them = 136

Mean number of reasons per mother = 2

A total of 136 reasons were given by the 68 respondents for delivering at home. The average number of reasons given by each mother was 1.5.

The five most common reasons given by the mothers were that they always had easy delivery (44.1%), that they had short labour pain (39.7%), that there was nobody to look after their children at home (30.9%), that they were not familiar with the hospital environment (27.9%) and that their family members could not be with them when they deliver in hospital (17.6%).

5.3.7 REASONS FOR SELECTING GOVERNMENT MIDWIFE

As was mentioned among the 68 respondents who had home delivery, 48 (70.6%) called the government midwife, 18 (26.5%) called a traditional birth attendant and 2 (2.9%) mothers had BBA (birth before arrival).

A total of 63 reasons for selecting government midwife were given by the 48 mothers, giving an average of 1.3 responses per mother, as shown in Table XIX.

The five most common reasons given for calling the government midwives by the mothers were that the government midwives had official training and they provide modern and safe services (54.2), that it is required by the law to call government midwife (39.6%), that they were acquainted to the midwife (14.6%), that

TABLE XIX

Reasons for calling government midwives among the respondents who delivered at home

REASONS	NO. OF MOTHERS	% OF MOTHERS
*GM has official training and provide modern and safe services	26	54.2%
Her services were free of charge	4	8.3%
Acquainted with the GM	7	14.6%
Insist by family members	3	6.3%
Suggested by the TBA	2	4.2%
Required by the law	19	39.6%
TOTAL	63	

Number of mothers who called government midwives = 48

Number of reasons given by them = 63

Mean number of reasons per mother = 1.3

* GM = Government midwife

* TBA = Traditional birth attendant

the services provided by a government midwife was free of charge (8.3%) and that the government midwife lived near to their house (6.3%).

5.3.8 REASONS FOR SELECTING TRADITIONAL BIRTH ATTENDANT

Thirty nine reasons were given by the 18 high risk mothers who called the traditional birth attendant (Table XX). On the average, each respondents gave 2.1 reasons.

The most common reason for calling the traditional birth attendant to attend to their delivery was that the traditional birth attendant provides many services (44.4%), such as giving traditional massage, cleaning and disposing the placenta and performing various other traditional functions during the post-partum period.

Other reasons given by the mothers for their choice of a traditional birth attendant were that they are much older and their services had been used by the respondent's mother and relatives (38.9%), that the traditional birth attendant lived nearby (33.3%), and that the traditional birth attendant was recommended by relatives (22.2%),

TABLE XX

Reasons for selecting Traditional Birth Attendant among the respondents who delivered at home

REASONS	NO. OF MOTHERS	% OF MOTHERS
* TBA provide many services	8	44.4%
TBA lived nearby	6	33.3%
Acquainted to the TBA	4	22.2%
Recommended by family members	4	22.2%
TBA had been used by parent	7	38.9%
Government midwife not available	1	5.6%
Afraid to be sent to hospital if called government midwives	6	33.3%
Others	3	16.7%
TOTAL	39	

Number of mothers who called the TBA = 18

Number of reasons given by them = 39

Mean number of reasons per mother = 2.1

* TBA = Traditional birth attendent

5.4 PRACTICE

5.4.1 NUMBER OF ANTENATAL VISIT

In Table XXI it is shown that 15 (22.1%) of the respondents who delivered at home had five or less antenatal visits during their pregnancy. 4 (4.6%) of the mothers who delivered in hospital also had the same number of antenatal visits.

On the other hand, 62 (71.3%) of the mothers who delivered in hospital had between 6 - 10 antenatal visit during their pregnancy 44 (64.7%) of the respondents who delivered at home also had between 6 - 10 antenatal visit during their pregnancy. The mean number of antenatal visit for mothers who delivered in hospital was 9 compared to 7 for home delivery mothers.

However, these differences were statistically not significant.

5.4.2 FUTURE PLAN

Table XXII shows the preference for place of delivery for a future pregnancy among the respondents. Among the mothers who delivered at home 28 (41.2%) said that they would still prefer to deliver at home if they were pregnant again. It is interesting to note that 8 (9.2%) of the mothers who delivered in hospital said

TABLE XXI

Distribution of high risk mothers by number of antenatal visit and place of delivery

FREQUENCY	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
5 or less	4 (4.6%)	15 (22.1%)	19 (12.3%)
6 - 10	62 (71.3%)	44 (64.7%)	106 (68.4%)
more than 10	17 (19.5%)	3 (4.4%)	20 (12.8%)
Missing	4 (4.6%)	6 (8.8%)	10 (6.5%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

TABLE XXII

Distribution of high risk mothers by future plan and place of delivery

INTENDED PLACE OF DELIVERY	HOSPITAL DELIVERY	HOME DELIVERY	TOTAL
Home	8 (9.2%)	28 (41.2%)	36 (23.3%)
Hospital	70 (80.5%)	26 (38.2%)	96 (61.9%)
Not sure yet	9 (10.3%)	14 (20.6%)	23 (14.8%)
TOTAL	87 (100%)	68 (100%)	155 (100%)

that they prefer to deliver at home if they were pregnant again.

Seventy (80.5%) of the respondents who delivered in hospital still prefer hospital delivery for their future pregnancy while 14 (38.2%) of the mothers who delivered at home were interested in a hospital delivery.

CHAPTER VI

DISCUSSION

Data from the Malaysian Population and Family Survey conducted in 1984 and 1985 shows that, about 45% of all births were delivered in government hospitals or clinics and the remaining 40% at home.[39] Among the different ethnic groups, Malays have the greatest tendency to choose home deliverty (60%) as opposed to institutional delivery (40%).

In Peninsular Malaysia, the number or maternity beds currently available stands at about 3455, of which 2733 are in government hospitals and 722 in private hospitals or maternity homes.[39] On the other hand, an average of about 1000 births are recorded daily. Assuming a balanced distribution of maternity beds and barring significant seasonality in births, these figures seem to suggest that inadequacy of facilities is not a dismal problem. As such, preference of home delivery can be attributed to a multitude of other factors such as beliefs, and adherence to customs and traditions, lack of knowledge, socio-economic and other cultural factors.[39]

In 1970, 70% of maternal deaths in Peninsular Malaysia occured in women identified as high risk,[12] and

the risk factors for maternal outcome are virtually the same as perinatal outcome.[11] Therefore, pregnant women identified as high risk should deliver in a hospital so that intensive care and observation can be given to minimise the risk of maternal and perinatal mortality. But there still exist today negative health attitudes among some of the high risk Malay mothers, especially in the rural areas, who refuse hospital delivery despite advice from health staff.

Hence in this study the writer attempts to determine and discuss some of the factors which affect the choice of place of delivery among high risk Malay mothers.

6.1 GENERAL DEMOGRAPHY

From this study it is seen that mothers of all age groups and mothers of all parity almost equally preferred both hospital delivery and home delivery. However, it appears that mothers of para 1, who relatively were in the young age group were more willing to use modern medical services, compared to multiparous mothers, who mostly were in the older age group. This may be due to the thrust of the Maternal and Child Health Service which put more emphasis towards primigravidae mothers. Being pregnant for the first time, these mothers are probably more anxious and therefore pay more attention to advice from the health staff,

and were more willing to utilize the modern services provided to them. However, the elderly multiparous mothers based on either the confidence of their experience in the past deliveries, or probably a bad experience in the hospital preferred to deliver at home.

Education plays an important role in the health status of a person. However, in this study it is observed that the choice of place of delivery among the high risk mothers were not related to their level of education. This finding is the opposite to the utilization of the services provided in the Out-patient Department. In a study on the utilization of services in the Out-patient Department in a district hospital in the state of Trengganu Peninsular Malaysia, it is seen that people with lower educational level tend to use more of the services provided to those with higher level of education. This finding shows the selective role of the level of education with respect to the type of care sought. It seems that when it comes to seeking care for general illnesses, the people with lower education tend to choose modern medical facilities such as services provided at the Out-patient department. However, when it comes to the choice of place of delivery, this is done independently of their level of education. Other factors are probably playing more important roles.

In this study, it is also seen that the proportion of housewives among the high risk mothers who delivered at home were slightly higher than those delivered in hospitals (see Table III). This may be due to the housewives being less exposed to modern medical facilities and being influenced more by the elders in their community. Greater exposure to home delivery in the community may also influence their choice of place of delivery. On the other hand, working mothers especially government servants are more exposed to information and knowledge regarding modern medical services and facilities, and thus they are more willing to accept the modern services provided to them.

It is observed in this study that husbands with secondary education (lower secondary and upper secondary) preferred their wives to deliver in hospitals compared to home delivery. On the other hand, high risk mothers whose husband had no formal education or had only primary education preferred to deliver at home rather than at hospital (see Table IV). These findings showed that level of education of the husbands is an important factor determining the choice of place of delivery among high risk mothers. The higher the level of education of the husbands, the more likely the mothers are to deliver in hospitals.

A review of the husbands' occupation show that high risk mothers whose husbands were government servants, preferred to deliver in hospitals. On the other hand, high risk mothers whose husbands were fisherman preferred to deliver at home (see Table V). This finding is consistent with findings regarding the level of education of the husband. Husbands who were government servant generally have higher educational level compared to fisherman. This fact probably affect the choice of place of delivery of their wives.

Other factors which may be related to the husbands occupation is the household income. High risk mothers whose husbands were fisherman were relatively poor compared to those whose husbands were government servants. Their preference of home delivery was probably due to the fact that they could not afford to pay the hospital fees and other expenses that come with hospital delivery. On the other hand, mothers whose husbands were government servants despite being relatively wealthy, also enjoy hospital benefits. This fact probably explains their preference of hospital delivery. It was observed in this study that mothers with household income of $400.00 and more per month preferred to deliver in hospital. On the other hand, mothers with household income of less than $400.00 per month preferred to deliver at home. Household income is more

related to husbands' occupation and husbands' level of education rather than mothers' occupation and level of education.

In summary, it was observed that husbands' characteristics play a more dominant role in the choice of place of delivery among high risk mothers. This is not strange since in the Malay community the position of the primary authority in a family falls on the man.[46] The father is head of the household. While the woman may manage the actual running of the household, the Malay's image of their society is such that the husbands are regarded as the primary authority.[46] So any important decision in the family must probably be made by the husband and this includes the decision on the choice of place of delivery of the wives. Among Malays, being Muslims, the role of the husband is also spelt clearly by the religion. In this important matter is the explicit recognition given by the Holy Quran to male superiority: "Women have such honourable rights as obligations, but their men have a degree over them" (the Holy Quran, II:228).

6.2 DISTANCE TO HEALTH FACILITIES

Distance to health facilities is an important factor in determining its utilization. People have to travel to reach health facilities and health staff also have to travel to reach the people. Studies in East

Africa have shown a close correlation between proximity and the use of health facilities. In Uganda[47] the average number of out patient attendances per person halves for every two miles that people live from a hospital, every one and a half miles from a dispensary, and every one mile from an aide post. Whatever the country, few people will walk several miles for health services. Improved roads and transport services will presumedly increase the utilization of health facilities. In a study on attendances at an out-patient department of a district hospital in Malaysia, it was observed that 61.2% of the patient lived within 5 miles of the hospital and of those, 83.2% lived within 3 miles.[45]

In this study it is seen that among the high risk mothers who delivered in hospital, 75.9% of them lived within 6 kilometers (3.7 miles) of the antenatal clinic they attended, and 60.9% of them lived within 15 kilometers (10 miles) of the nearest hospital. On the other hand among the mothers who delivered at home it was found that 73.6% lived within 6 kilometers (3.7 miles) of the antenatal clinic they attended and 70.6% of them lived within 15 kilometers (10 miles) of the nearest hospital. This finding showed that majority of the respondents in this study have access to the antenatal clinic and hospital. Furthermore the road system and public transport service in Sungai Acheh are satisfactory. From the analysis in this study distance

to health facilities may not play an important role in determining the choice of place of delivery among the high risk mothers.

6.3 KNOWLEDGE ON RISK FACTORS

Knowledge of a person in many aspects is influenced by many factors such as socio-cultural background, level of education and occupation. In this study an attempt was made to find out the knowledge on some common risk factors in pregnancy among the high risk mothers. Questions asked were based on the five common risk factors namely maternal age, parity of mothers, condition of present pregnancy, associated medical problem and past obstetrict history. It is interesting to note that in this study, knowledge on risk factors did not play an important role in the choice of place of delivery among the high risk mothers. It was observed that both the hospital delivery and home delivery mothers were equally knowledgeable with respect to per vaginal bleeding, anaemia, post maturity, associated medical problem and previous obstetric history as risk factors. However, they were also equally less knowledgable with respect to maternal age and parity of mother as risk factors in pregnancy, especially so among the home delivery mothers (see Table XII).

When the knowledge regarding each of the risk factors in pregnancy among the respondents were compared

with respect to their age group, level of education and household income, no associations were found.

6.4 ATTITUDE

In Malaysia a risk approach strategy has already been adopted into the Maternal and Child Health Service, whereby records of cases identified as priority or requiring special care according to a set criteria are tagged red and followed up intensively. Hence, all the high risk mothers are informed by the health staff of the condition of their pregnancy.

However, in this study when all of the respondents were asked whether they were informed of their risk pregnancy, 8.8% of the mothers who delivered at home denied that they have been informed. With respect to their own perception regarding the condition of their pregnancy, 69% of the mothers who delivered in hospital and 47.1% of the mothers who delivered at home agreed that their pregnancy were high risk. Yet, despite being informed and awareness of their high risk pregnancy, some of them still delivered at home. This was probably due to their ignorance of the seriousness of the situation, the danger to themselves and to the newborn. On the other hand, the health staff probably did not have the time to properly advise the mothers on the need of hospital delivery due to the heavy clinic attendance. It could also have been that the mothers themselves probably had already decided to deliver at home from the

onset of their pregnancy, thus they did not pay attention to advice or information from health staff.

Some other reasons given by the mothers for their preference of home delivery despite their awareness of the risk factors were that there was nobody to look after their children at home, that they were not familiar with the hospital environment and that their family members could not be with them if they delivered in hospital. Some of them delivered at home because they fear of the possibility of surgical intervention if delivered in hospital. Since the husbands were influential in the choice of place of delivery of their wives, we must not rule out the possibility of the husbands' ignorance. The husbands probably were not aware of the high risk pregnancy of their wives.

From this study it is seen that 82.4% of the high risk mothers who delivered at home made their own decision regarding their choice of place of delivery. Among the respondents who delivered in hospitals, 71.3% of them also made their own choice of place of delivery. Only 16.1% of the respondents who delivered in hospital and 11.8% of the mothers who delivered at home said that the decision on place of delivery was made by their husbands. These findings also showed that among the high risk mothers, most of the time it was the mothers themselves who made the choice of place of delivery. It appeared that they were not influenced by other persons

such as their husbands, parents or relatives. This finding however does not correspond with the earlier findings on the influential role of the husbands with respect to the choice of place of delivery of their wives. But this is not surprising since the wives most of the time made their decision based on their husbands dominance and feelings. Married women in the Malay community are expected to be obedient to their husbands and to continue being modest and self-effacing.[48] At the same time they assumed the responsibility of managing their households, including serving as treasurers and also earn money in their own right.[48] Thus the ideal obedience to husband is balanced by real reponsibilities that encourage independence of action on the wife's part.[48]

In this study it was also significantly found that mothers who delivered in hospital, whose husbands had higher educational level, better occupation and higher household income made their decision on the place of delivery in early pregnancy, compared to mothers who delivered at home (see Table XVI). This finding may be due to closer communication between husband and wife among the hospital delivery mothers since their husbands were relatively better educated compared to the husbands of home delivery mothers. This factor probably influenced their early decision and planning with respect to the place of delivery. On the other hand, among the home delivery mothers, since their husbands

were relatively less educated and had low household income, they were not able to decide early despite their awareness of their high risk pregnancy. This may be due to the fact that they did not want to burden their husbands knowing it may cause hardship in the family, even though they probably wanted to deliver in hospital. The last minute decision among the home delivery mothers could also be due to pressures from their relatives and parents and in order to avoid any misunderstandings, they probably delayed their decision. Some of the mothers decided to deliver at home or rather changed their decision to deliver at home instead of hospital at the last minute due to short labour pain (see Table XVIII).

6.5 REASONS FOR THE CHOICE OF MIDWIFE

Trained government midwives are auxilliary midwives who have received from 18 to 24 months of training and who have passed the necessary examinations to enable them to be officially registered. They are the persons who are qualified to practice midwifery. They are trained to give the necessary care and advice to women during pregnancy, labour and post-natal period. They are also trained to conduct normal deliveries on their own and to care for the newborn infant. At all times she must be able to recognise the warning signs of abnormal and potentially abnormal conditions which necessitate

referral to a doctor, and to carry out emergency measures in the absence of medical help. Her work also includes family planning and certain aspects of child care.

Even though all high risk mothers should not deliver at home, but if they still insist on home delivery, they have been advised that they must call the government midwife. It is encouraging to note that in this study 70.6% of the mothers who delivered at home called government midwives to attend to their deliveries. Two major reasons given for this was that the government midwives had official training and provided modern services and that it was required by the law to call government midwife (see Table XIX). While the former reason is acceptable, the latter that it is required by the law seems surprising though this is not so. Those who called a government midwife due to this reason were probably misinformed. Nevertheless, it has evoked a positive response.

Home delivery has always been the responsibility of traditional birth attendants until independence in 1957 when educated young women have been trained as auxilliary midwives and sent to serve the rural community.[49] The traditional birth attendant or bidan kampung is a highly respected member of the community and is reffered to by the honourable title of tok,[41] an honour denied to the trained government midwife. The bidan kampung usually operates in a relatively

restricted geographical area in her own village, and has learnt the art of midwifery from some older bidan kampung who might have been a mother, aunt or grand mother. She is respected not only for the physical help she provides but also for her humanitarian approach, being paid according to the means of each family she assist. She is a reassuring figure who is patient, unhurried, and familiar.[41] Among the 18 mothers who called the bidan kampung in this study, majority called her due to these factors.

The bidan kampung knows and understands the local customs and works within the framework of local belief and values. She provides advice and instructions concerning the antenatal taboos and bahavioral avoidance that the family has to observe in order to ensure safe delivery and a normal infant, to supervise the performance of precautionary measures during labour, to ritually bathe the mother, to supervise the ritual disposal of the after birth, to wash soiled linen, to provide advice and instruction concerning the roasting of the body and the abdomen, to provide heating medicine, and to perform the traditional post partum massage of the mothers body.[49] 44.4% of the mothers who called bidan kampung in this study did so due to the many services provided by the them.

Even though the number of deliveries conducted by the traditional birth attendant had reduced

tremendously, they are still an influential figure especially in rural area. They are still the person who conducts all the traditional practices during the natal and postnatal period, even for the mothers who were delivered by the government midwives and those who delivered in hospital.

6.6 ANTENATAL CARE

Antenatal care should commence from the time pregnancy is diagnosed and should continue until the safe delivery of the mother. Unfortunately, this is usually not the case in the developing countries where a majority of the mothers still have little or no antenatal care. An effective and thorough antenatal care requires close coorperation of all the medical and para medical personnel, and must take into consideration the general health, mental outlook, social and economic background of the mother as well as her obstetric condition. Mothers should be encouraged to attend the antenatal clinic early, either at a health centre, private maternity home or at a hospital. The aims of the antenatal care is to provide education including preparation for labour and parenthood, diagnosis and treatment of symptomatic problems, recognition and management of asymptomatic but potentially harmful conditions. The Ministry of Health recommended at least 8 antenatal visits for each pregnant mother, and more frequent if she is identified as high risk.

In this study it is seen that 71.3% of high risk mothers who delivered in hospital had between 6 to 10 antenatal visits during their pregnancy compared to 64.7% of mothers who delivered at home. 22.1% high risk mothers who delivered at home had only 5 or less antenatal visit during their pregnancy. Only 4.6% of the mothers who delivered in hospital had 5 or less antenatal visits.

This finding is associated with the earlier findings regarding the distance to the nearest antenatal clinic. It was found that the hospital delivery mothers generally lived nearer to the antenatal clinic they attended compared to the home delivery mothers (see Table VIII). This probably explains the more frequent antenatal visit among the hospital delivery mothers. Other than that the hospital delivery mothers were probably more motivated than the home delivery mothers.

CHAPTER VII

RECOMMENDATIONS

This study is by no means an exhaustive one and much more needs to be done to change the negative attitude of the high risk Malay mothers in general towards utilisation of modern health services provided to them by the government.

However, based on the findings in this study and his experience of working in a rural area for a period of two years, the writer would like to make some recommendations which could help to improve the situation in the long run.

I) Health education

-For the mothers

Efforts should be intensified to educate mothers on the dangers of home delivery especially for the high risk cases. The mothers need to be aware of all conditions that are likely to affect their pregnancy adversely, especially with respect to maternal age and parity of mother as risk factors. Both maternal age and parity of mother were the most common risk factors among the high risk mothers. It was also seen that both the hospital

delivery and home delivery mothers were equally less knowledgable with regard of these being risk factors in pregnancy. It is advisable to talk to a small group at a time. The health staff must create a friendly atmosphere, the discussion should be conducted in a conversational way so that the mothers may have a chance to express their views freely. Talk must be simple, and in a language the mothers can understand. The health staff must not use terms the mothers do not understand. If visual aids are used to illustrate certain points, they must be clear and meaningful to the mothers.

-For the husband and relatives

During home visiting, the health staff must take the oppurtunity to talk to the husbands, parents and elderly people in the house to gain their trust and confidence in our services. For this purpose the health staff need to know the culture and values of the community in which they are working. Since the husbands were found to be very influential in the choice of place of delivery of their wives, efforts need to be made to educate them with respect to maternal and child health care, especially on the risk factors in pregnancy. The best way to do this is through the mass media especially television. At local level the health

education unit can show films on maternal and child care in addition to films on environmental sanitation which is currently shown to the people.

-For School leavers

It is good to instil positive health bahaviour among the children since they are going to be leaders of tomorrow. School leaving children is the best group to give health education concerning maternal and child health care bacause some of them will go into family life soon after school. It can be conducted in the form of health talks preferably by the doctor in-charge of the School Health Programme. He can talk on the proper care of pregnant mothers and children, and the Maternal and Child health Programme of the Ministry of Health. All school leavers (Form 5 students) both males and females must attend this talk. The time can be arranged with the principal of each of the schools.

II) Community participation

-Community leaders

We must get the commitment of the community leaders to coorperate with the health authorities to encourage the people to utilize all the health services provided to them. The leaders need to be informed and made aware of the health status of the

people in their area from time to time. At the same time we can get feedback from these leaders on the problems within the community, which can then be used to evaluate our services and identify changes that need to made to the existing strategies.

-Social organisations

Social organisations such as youth clubs and the women institutions at local levels should be persuaded to include health education in their activities. The health authorities must liase with all these organisation to ensure their participation in educating the public on health matters. This can be achieved by organising health talks and distributing pamphlets on health education to their members.

III) Registration and training of bidan kampung

Efforts need to be made to register all the traditional birth attendant practicing in each area. This needs to be done at the local level by each district health office, so that their activity and their influence on the community can be monitored. They should be trained especially on cleanliness and asepsis of their procedures. They must also be taught about signs and symptoms of common risk factors in pregnancy and the need to

refer such a patient early to the nearest health center. The training can be conducted by the local health staff.

IV) Training of staff

Staff involved in the Maternal and Child Health Programme need to be sent regularly for in service training and refresher courses conducted by the State Health Department or Maternal and Child Health Unit of the Ministry of Health.

V) Evaluation

Evaluation of the programmes if implemented can be done annually based on the following variables looking for positive outcomes :

VARIABLE	POSITIVE OUTCOME
Attendance to antenatal clinic	- Increase
Proportion of safe deliveries	- Increase
Proportion of unsafe deliveries	- Decrease
Proportion of hospital deliveries	- Increase
Proportion of home deliveries among the high risk mothers	- Decrease
Maternal and perinatal mortality rates	- Decrease

All of these recommendations have to be carried out continously on a long term basis. The people involved in educating the public need to be aware that changing behaviour is a slow process, sometimes taking a generation before any impact is seen. Nevertheless, these programmes need to be done.

CHAPTER VIII

SUMMARY

This survey, a comparative study of factors affecting the choice of place of delivery among high risk Malay mothers was carried out in the area of Sungai Acheh in the district of Seberang Perai Selatan, Pulau Pinang. The survey was carried out from 8th. of December 1986 until the 31st. of December 1986.

The findings in this study is summarised below.

i) A total of 221 high risk Malay mothers were identified for the study. 155 of them responded to the survey. 87 (56.1%) delivered in hospital and 68 (43.9%) delivered at home.

ii) High risk mothers of all age group almost equally preferred hospital and home delivery. Mean age for mothers who delivered in hospital was 31.3 years and the mean age for mothers who delivered at home was 32.0 years.

iii) High risk mothers of para 1 preferred hospital delivery (32.2%) as compared to home delivery (17.6%). However, mothers of para 6 and para 7 taken together preferred home delivery (35.4%) as compared to hospital delivery (23.0%).

iv) Most of the respondents in this study were housewives (83.2%). Among the high risk mothers who delivered at home, 91.2% were housewives compared to 77.0% among the mothers who delivered in hospital who were housewives.

v) High risk mothers of all levels of education equally preferred hospital delivery and home delivery.

vi) High risk mothers whose husbands were fisherman preferred home delivery (20.6%) as compared to hospital delivery (5.7%). High risk mothers whose husbands were government servants preferred hospital delivery (23.0%) as compared to home delivery (13.2%).

vii) Husbands with no formal education or had only primary education preferred their wives to deliver at home (7.4% and 77.9% respectively) as compared to hospital delivery (1.1% and 64.4% respectively). High risk mothers whose husbands had secondary education preferred hospital delivery (28.7%) as compared to home delivery (14.5%0.

viii) High risk mothers with household incomes of less than $400.00 per month preferred home delivery (89.7%) as compared to hospital delivery (70.1%). High risk mothers with household incomes of $400.00

and more preferred hospital delivery (29.9%) as compared to home delivery (10.3%).

ix) The mean distance from their houses to the antenatal clinic they attended for the mothers who delivered in hospital was 2.85 kilometers while for mothers who delivered at home was 3.85 kilometers.

x) The mean distance from their house to the nearest hospital for the mothers who delivered in hospital was 9.22 km while for the mothers who delivered at home was 9.91 km.

xi) 60% of the respondents had one risk factor, 31% had two risk factors and 9.0% had three risk factors.

xii) The most common risk factor among the respondents was due to maternal age (43.3%), followed by parity (23.4%), condition of present pregnancy (18.2%), associated medical problem (12.5%) and previous bad obstetric history (2.6%).

xiii) 66.7% of mothers who delivered in hospital compared to 51.5% of mothers who delivered at home knew that age at pregnancy that is considered as high risk

xiv) 50.6% of mothers who delivered in hospital answered correctly that parity is associated with high risk. Only 29.4% of mothers who delivered at home got the right answer.

xv) Condition of present pregnancy which was considered as a risk factor was known to 93.1% of the mothers who delivered in hospital compared to 83.8% of mothers who delivered at home.

xvi) 81.6% of the respondents who delivered in hospital knew that associated medical problems could be considered as risk factors. 77.9% of the mothers who delivered at home also knew about this.

xvii) That past obstetric history is a risk factor is known to 98.9% of the mothers who delivered at hospital as compared to 95.6% among the mothers who delivered at home.

xix) Regarding their pregnancy, 69% of the mothers who delivered in hospital perceived it as high risk as compared to only 47.1% of the mothers who delivered at home who had the same perception.

xx) Among the high risk mothers who delivered in hospital, 71.3% of them made their own decision on their choice of place of delivery, as compared to 82.4% among the mothers who delivered at home.

xxi) 51.7% of the mothers who delivered in hospital made their decision on place of delivery during the first eight months of pregnancy, while only 22.1% of the mothers who delivered at home made their decision during this period.

xxii) The main reason for their preference for hospital delivery among the mothers who delivered in hospital was that hospital delivery was modern and safe.

xxiii) The most common reason for the preference of home delivery among the respondents who delivered at home was that they always had easy delivery (44.1%) or that they had short labour pain (39.7%).

xxiv) The reasons of calling government midwives among the 48 (70.6%) of mothers who called them were that the government midwives had official training and provide modern services (54.2%) and that it is required by the law to call government midwives (39.6%).

xxv) 26.5% of the respondents who delivered at home called the traditional birth attendant.Their reasons for calling them were that they provided many services (44.4%), that they had been used by their parents and relatives (38.9%) and that they lived nearby (33.3%).

xxvi) The mean frequency of antenatal visit during their pregnancy among the mothers who delivered in hospital was 9.3 compared to 7.6 for the mothers who delivered at home.

xxvii) 80.5% of the respondents who delivered in hospital still prefer to deliver in hospital if they were

pregnant again while 41.2% of the mothers who delivered at home still prefer to deliver at home if they were pregnant again.

CHAPTER IX

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CHAPTER X

APPENDICES

Appendix I

Risk factors in pregnancy.

1) Maternal age

Expectant mothers age below 18 years old and above 35 years old.

2) Parity

Expectant mothers with parity 1 or parity 6 and above.

3) Condition of present pregnancy

Expectant mothers who have one or more of the condition listed below:

- Anaemia (Haemoglobin level of below 9gm.%)
- Pre-eclampsia.
- Per vaginal bleeding at any time during the pregnancy.
- Multiple pregnancy.
- Abnormal presentation after 32 weeks of gestation.
- Postmaturity - more than 42 weeks of gestation.
- Cephalo-pelvic disproportion.

4) Associated medical problem

Expectant mothers who has any of the diseases listed below:

- cardiovascular diseases
- tuberculosis
- renal diseases
- diabetes melllitus
- thyrotoxicosis (goitre)
- hypertension

5) Previous obstetric history

Expectant mothers who has any bad obstetrics experiences as mentioned below:

- abortions
- perinatal loss
- antepartum haemorrhage
- postpartum haemorrhage
- obstetric or gynaecology surgery

Appendix II

Factors related to reluctance to deliver in hospital.

I. PERSONAL FACTORS

i) Always had easy delivery

ii) Family members not around

iii) Had short labour pain

iv) Afraid of surgery

v) Cultural reasons

vi) not familiar with hospital environment

II. FAMILY FACTORS

i) Nobody to look after children at home

ii) Family members refuse hospitalisation

III. HOSPITAL RELATED FACTORS

i) Financial problem

ii) No transport to go to hospital

iii) Hospital too far

iv) Had bad experiences in hospital previously

Appendix III

Working definitions used in this study.

1) Age of mothers

Age of the mothers taken to the last complete years as on the day of registration at the antenatal clinic for her most recent pregnancy.

2) BBA (Birth before arrival)

Mothers who delivered their baby before the arrival of the midwives.

3) Household income

Total cash income of all the household members calculated per month.

4) High risk mothers

Mothers who has one or more of the risk factors as listed in Appendix II.

5) Level of education

Refers to the level of formal education, that is a school education, that a person attained.

i) No formal education - has not attended school at all.

ii) Primary education - has gone through partially or completely standard 1 - 6 of primary school.

iii) Lower secondary education - has gone through partially or completely form 1 - 3 of

secondary school.

iv) Upper secondary education - has gone through partially or completely form 4 - upper six of secondary school.

v) Tertiary education - has gone through higher education such as college, polytechnic and university.

6) Maternal Mortality Rate

Total number of deaths due to complications of pregnancy and childbirth per thousand livebirths.

7) Occupation

Refers to the main job a person holds presently and which occupies most part of his working time.

8) Perinatal Mortality Rate

Total number of stillbirths and deaths under 7 days of age per thousand livebirths ans stillbirths.

9) Respondents

Those mothers who fulfilled the criteria of highrisk mothers and selected as study sample in this survey.

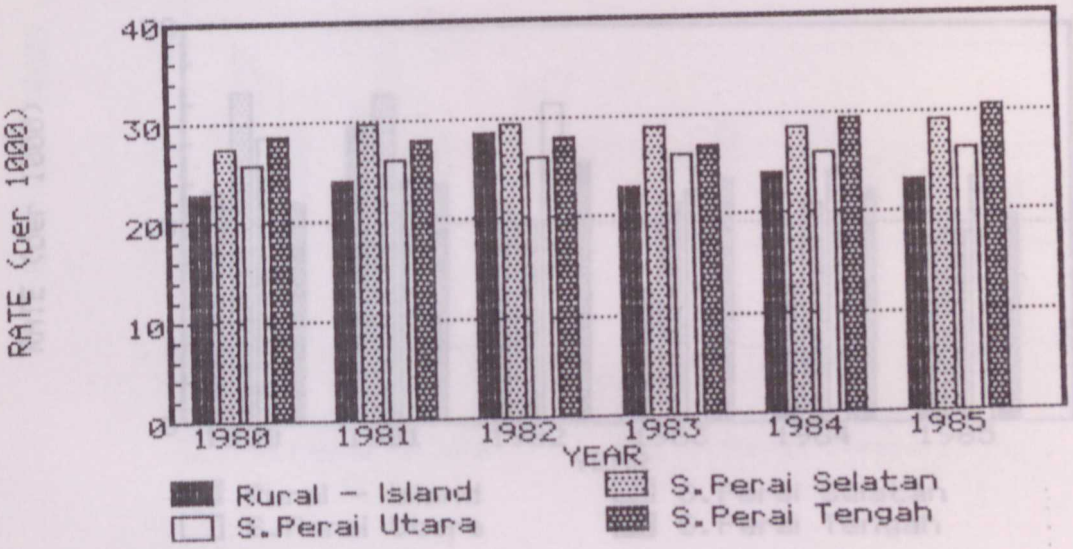
10) Risk Factors

Those factors known to adversely affect pregnancy outcome. In this study are those factors as listed in Appendix I.

APPENDIX IV-A

Crude Birth Rate by District, Pulau Pinang.

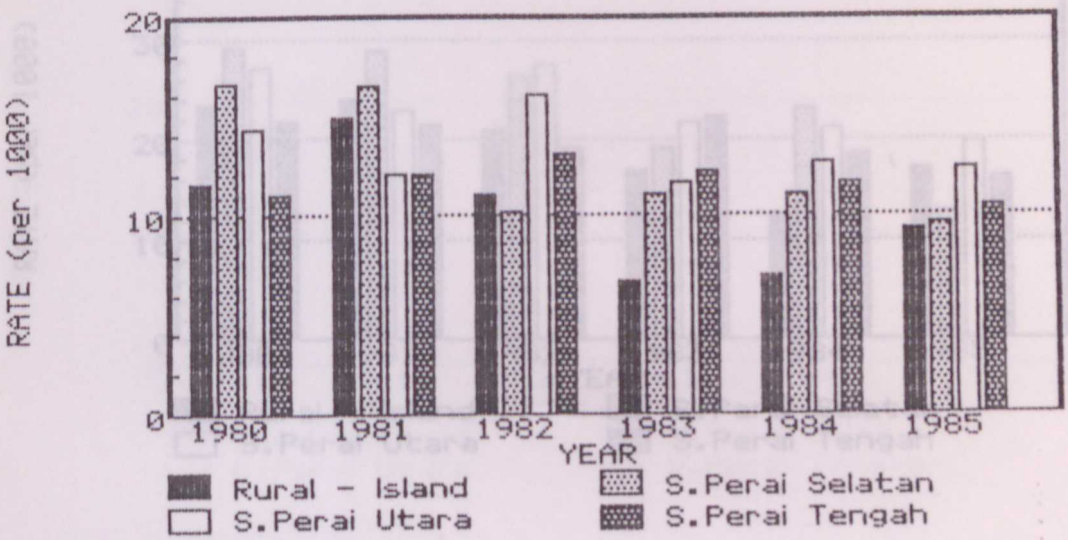
1980 - 1985



APPENDIX IV-B

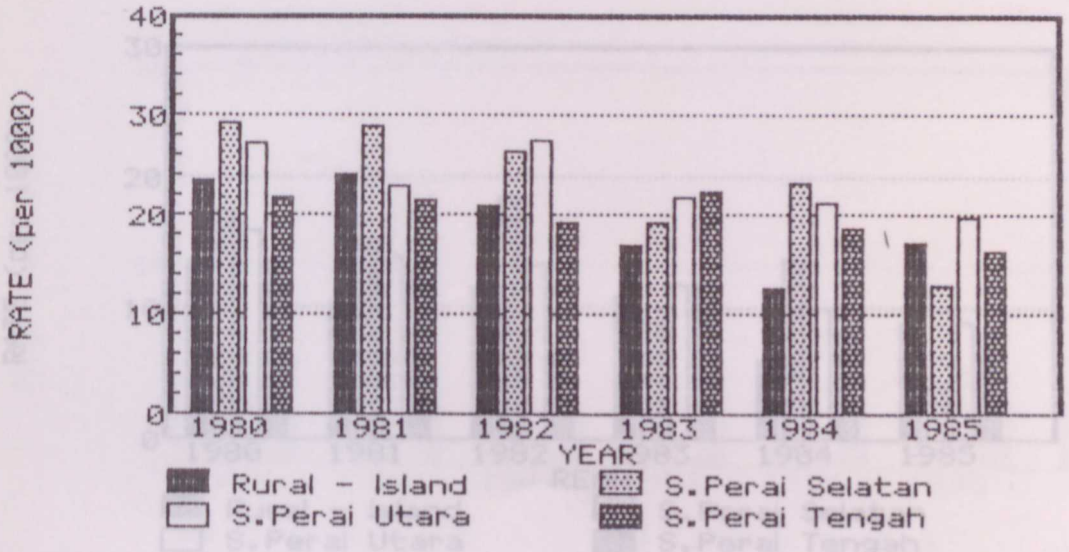
Stillbirth Rate by District, Pulau Pinang.

1980 - 1985



APPENDIX IV-C

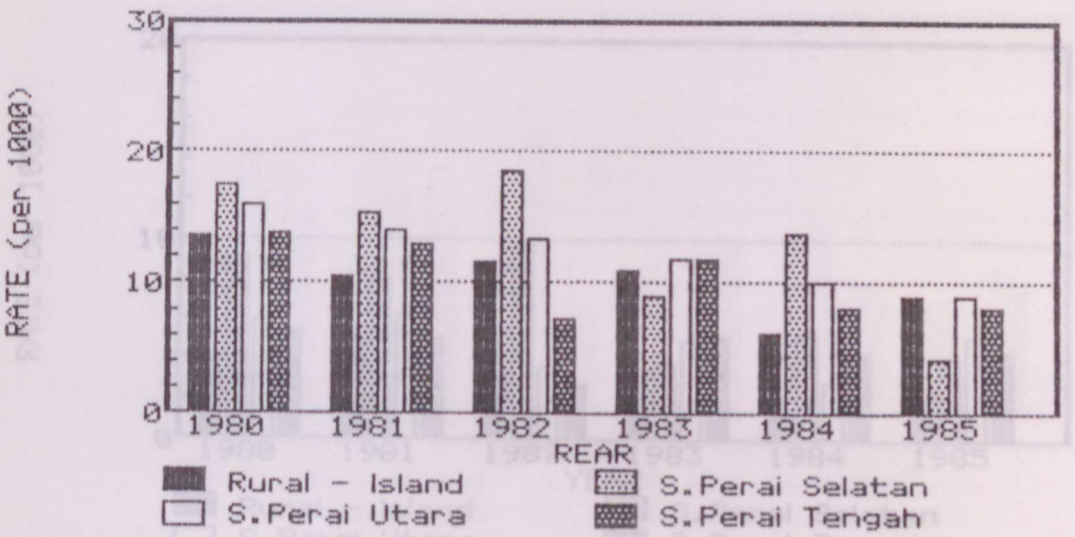
Perinatal Mortality Rate by District, Pulau Pinang.
1980 - 1985



APPENDIX IV-D

Neonatal Mortality Rate by District, Pulau Pinang

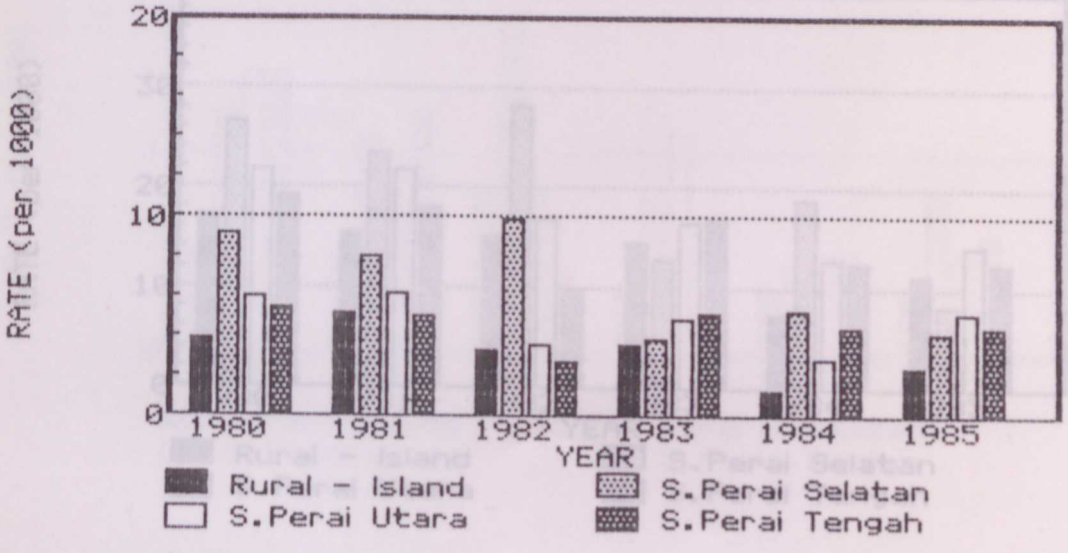
1980 - 1985



APPENDIX IV-E

Post-neonatal Mortality Rate by District

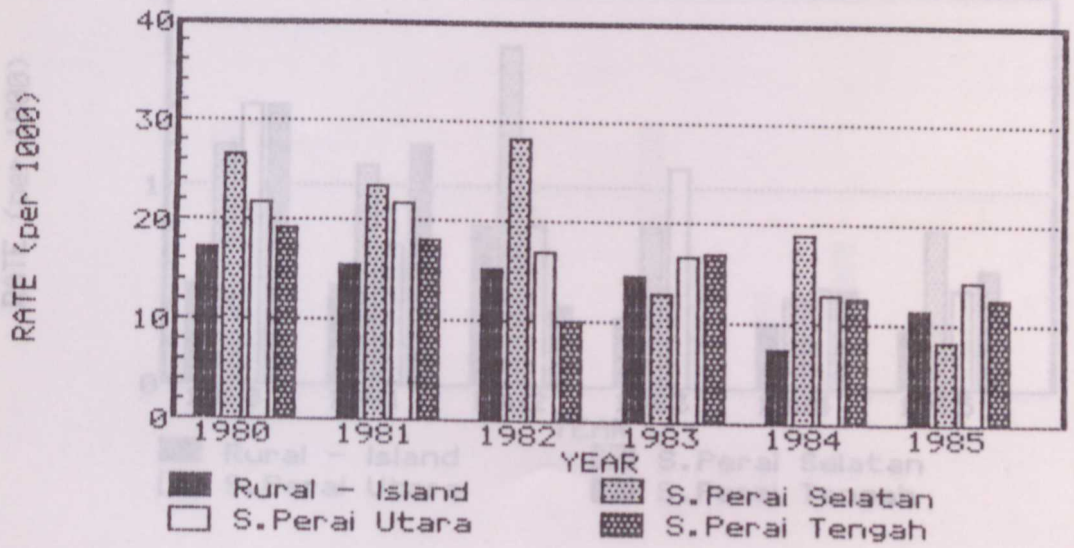
Pulau Pinang. 1980 - 1985



APPENDIX IV-F

Infant Mortality Rate by District, Pulau Pinang

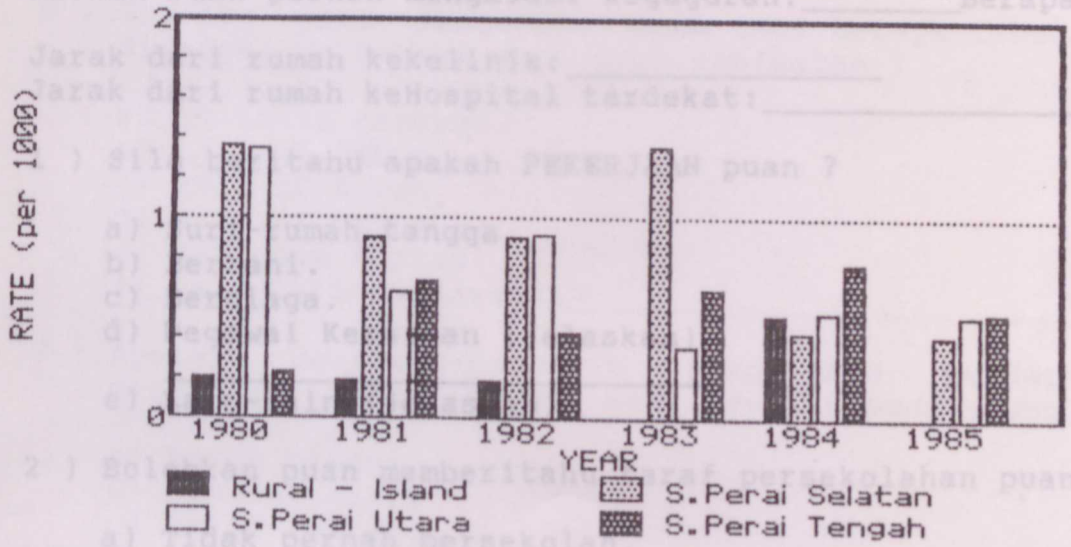
1980 - 1985



APPENDIX IV-H

Maternal Mortality Rate by District, Pulau Pinang

1980 - 1985



APPENDIX V

BORANG KAJI-SELIDIK SG.ACHEH

Tarikh temuduga:_____ [ ] 1985/RUMAH
Nama Penemuduga:_____ [ ] 1986/RUMAH
[ ] 1985/HOSP.
[ ] 1986/HOSP.

Nama Ibu:_____
Tarikh lahir:_____Jumlah anak (termasuk yg mati)___
Anak Puan yang BONGSU, anak nombor berapa?_____
Adakah Puan pernah mengalami keguguran:_____Berapa kali:__

Jarak dari rumah kekelinik:_____
Jarak dari rumah keHospital terdekat:_____

1) Sila beritahu apakah PEKERJAAN puan ?

a) Suri-rumah tangga.
b) Bertani.
c) Berniaga.
d) Pegawai Kerajaan (jelaskan)
_____
e) Lain-lain (jelaskan)_____

2) Bolehkan puan memberitahu taraf persekolahan puan.

a) Tidak pernah bersekolah.
b) Sekolah rendah.
c) Tingkatan Tiga.
d) Tingkatan Lima.
e) Kolej/Universiti.

3) Apakah pekerjaan utama SUAMI puan ?

a) Bertani.
b) Nelayan.
c) Kerja sendiri.
d) Berniaga.
e) Pegawai kerajaan (jelaskan)_____
f) Lain-lain (jelaskan)_____

4) Apakah taraf pendidikan SUAMI puan ?

a) Tidak pernah sekolah.
b) Sekolah rendah.
c) Tingkatan Tiga.
d) Tingkatan Lima.
e) Kolej/Universiti.

Sekarang saya ingin bertanya beberapa soalan berkaitan dengan kehamilan (mengandung) dan melahirkan (beranak).

5) Ibu-ibu yang mengandung kali keberapakah yang dianggap mempunyai risiko tinggi (merbahaya) dari segi kesihatan ?

a) Pertama
b) Kedua
c) Ketiga
d) Keempat
e) Kelima
f) Keenam
g) Ketujuh dan selebihnya.
h) Lain-lain (jelaskan)_____

6) Ibu-ibu yang mengandung pada umur berapa tahunkah yang dianggap merbahaya dari segi kesihatan ?

a) 17 tahun kebawah.
b) 18 - 25 tahun
c) 26 - 30 tahun
d) 31 - 35 tahun
e) 36 tahun keatas.
f) Lain-lain (jelaskan)_____

7) Apakah penyakit-penyakit yang pada pendapat Puan merbahaya kepada ibu dan anak sewaktu mengandung ?

a) Darah Tinggi
b) Kencing Manis
c) Sakit Jantung
d) Lain-lain (jelaskan)
_____

8) Sebarang perdarahan yang terjadi semasa mengandung boleh membahayakan kesihatan ibu dan anak ?

a) Ya
b) Tidak
c) Tidak tahu

9) Kerana apakah ibu-ibu yang mengandung kelihatan pucat dan tidak bertenaga ?

a) Kerana kekurangan zat makanan
b) Kurang darah
c) Lain-lain (jelaskan)_____

10) Ibu-ibu hamil yang pernah mengalami kesulitan semasa kandungan yang lepas seperti keguguran, lahir mati, sangkut uri, pembedahan dan sebagainya perlu melahirkan dimana untuk kandungan seterusnya ?

a) Hospital
b) Rumah
c) Tidak tahu

11) Adakah ibu-ibu yang mengandung lebih bulan (> 42/52) merbahayakan kesihatan ibu dan kandungannya ?

a) Ya
b) Tidak
c) Tidak tahu

12) Pada pendapat puan sendiri, adakah kehamilan Puan yang lalu berrisiko tinggi ?

a) Ya
b) Tidak
c) Tidak tahu

13) Adakah bidan/jururawat memberitahu bahawa kehamilan Puan tersebut mempunyai risiko tinggi ?

a) Ya
b) Tidak
c) Tidak ingat

14) Sekiranya kelahiran tersebut berrisiko tinggi, bolehkah Puan memberitahu apakah "Penyakit/Masaalah" (RISK FACTOR) yang PUan alami ?

i) _____

ii) _____

iii) _____

iv) _____

15) Dimanakah Puan dinasihatkan oleh BIDAN/JURURAWAT untuk melahirkan anak tersebut ?

a) Hospital
b) Rumah
c) Bidan tidak memberi apa-apa cadangan.
d) lain-lain (jelaskan)_____

16) Dimanakah Puan melahirkan anak tersebut ?

a) Hospital Kerajaan
b) Hospital Swasta
c) Rumah
d) Rumah dan Hospital

17) Siapakah yang menentukan dimana Puan patut melahirkan anak tersebut ?

a) Saya sendiri
b) Suami
c) Ibu/mertua
d) Bapa/mertua
e) Lain-lain (jelaskan)
_____

18) Waktu bilakah keputusan untuk menentukan tempat Puan melahirkan anak tersebut dibuat ?

a) Semasa mengandung 1 hingga 6 bulan
b) Semasa mengandung 7 hingga 8 bulan
c) Semasa cukup bulan
d) Semasa sakit untuk melahirkan
e) Lain-lain (jelaskan)_____

19) Sewaktu kehamilan tersebut berapa kalikah Puan pergi kekelinik untuk diperiksa ?

_____ kali

20) Berapakah JUMLAH PENDAPATAN BULANAN keluarga Puan ?

$_____ sebulan

IBU-IBU YANG MELAHIRKAN ANAK TERSEBUT DIHOSPITAL, SILA JAWAB SOALAN 21

21) Kenapakah Puan melahirkan anak tersebut dihospital ?

i) Saya memilih untuk melahirkan anak dihospital kerana ianya lebih selamat dan moden.

ii) Saya dinasihatkan oleh bidan/jururawat supaya melahirkan dihospital kerana saya mempunyai masaalah/komplikasi semasa mengandung.

iii) Keluarga saya (suami/ibu) mahu say melahirkan anak tersebut dihospital.

iv) Saya melahirkan anak tersebut dihospital kerana hospital berdekatan dengan rumah saya.

v) Lain-lain (jelaskan)_____

BAGI IBU-IBU YANG MELAHIRKAN ANAK TERSEBUT DIRUMAH SILA JAWAB SOALAN 22 DAN 23

22) Kenapakah Puan memilih untuk melahirkan anak tersebut dirumah ?

i) Saya selalu beranak senang.

ii) Keluarga saya sentiasa berada disamping saya jika beranak dirumah.

iii) Saya sakit cepat (short labour pain), tidak sempat untuk pergi hospital.

iv) Saya tidak beranak dihospital kerana takut kena BEDAH.

v) Saya tidak beranak dihospital kerana tidak biasa dengan keadaan dihospital.

vi) Saya tidak beranak dihospital kerana bertentangan dengan UGAMA.

vii) Saya tidak beranak dihospital kerana tidak ada orang untuk menjaga anak saya dirumah.

viii) Keluarga saya tidak membenarkan saya beranak dihospital.

ix) Saya tidak mampu untuk membayar bil hospital.

x) Saya tidak mempunyai kenderaan untuk pergi kehospital.

xi) Hospital terletak jauh dari rumah saya.

xii) Layanan kakitangan hospital tidak memuaskan.

xiii) Lain-lain (jelaskan)_____

_____

23) Siapakah yang membantu kelahiran puan tersebut ?

i) Bidan Kerajaan
ii) Bidan Kampung terlatih
iii) Bidan kampung tidak terlatih.
iv) Lain-lain (jelaskan)_____

BAGI-IBU YANG MEMILIH BIDAN KAMPUNG SILA JAWAB SOALAN 24

24) Kenapakah Puan memilih BIDAN KAMPUNG untuk membantu kelahiran anak tersebut ?

i) Bidan Kampung boleh membuat banyak perkara seperti mengurut, cuci uri, jampi dan lain-lain.

ii) Bidan Kampung tinggal dekat rumah saya.

iii) Saya kenal-baik dan rapat dengan bidan kampung tersebut.

iv) Keluarga saya (IBU/SUAMI) memilih bidan kampung tersebut.

v) Bidan kampung telah membantu semua keluarga saya sejak dari dulu.

vi) Saya terpaksa panggil bidan kampung kerana takut dihantar kehospital.

vii) Lain-lain (jelaskan)_____

_____

BAGI IBU-IBU YANG MEMILIH BIDAN KERAJAAN JAWAB SOALAN 25

25) Mengapakah Puan memanggil BIDAN KERAJAAN untuk membantu kelahiran anak tersebut ?

i) Bidan kerajaan adalah terlatih dan selamat dan moden.

ii) Saya pilih bidan kerajaan kerana percuma.

iii) Saya kenal baik dan rapat dengan bidan kerajaan itu.

iv) Bidan kerajaan tinggal dekat dengan rumah saya.

v) Keluarga (suami/ibu) mahu bidan kerajaan.

vi) Saya panggil bidan kerajaan kerana diminta oleh bidan kampung untuk berbuat begitu.

vii) Saya panggil bidan kerajaan kerana mengikut undang-undang.

26) Sekiranya puan mengandung lagi dimasa akan datang, dimanakan Puan akan melahirkan anak tersebut ?

a) Dirumah (alasan)_____

b) Dihospital (alasan)_____

c) Lain-lain (jelaskan)_____

SAYA MENGUCAPKAN TERIMA KASIH DIATAS KERJASAMA PUAN MENJAYAKAN KAJIAN INI.

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